

THE VETERINARY MAGAZINE

*A JOURNAL FOR THE PRACTITIONER, AND FOR THE ADVANCEMENT
OF COMPARATIVE MEDICINE.*

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No. 4.

USE OF ANESTHETICS IN VETERINARY PRACTICE

BY C. W. BUTLER,
Circleville, Ohio.

Notwithstanding the wonderful progress that has been made in veterinary science during the last two or three decades, I fear there are far too many veterinarians who do not use anesthetics even when performing the most painful and prolonged operations. The veterinarian above all others should be humane, and if he does not exercise every power to make the necessary operations painless, he is not doing his duty.

What is more repulsive to a sympathetic, kind-hearted person than to see a horse forced to submit to the most cruel operations upon the most sensitive structures, while in a conscious state? The removal of diseased eyes; operations involving the sensitive parts of the foot; firing exostoses and tendons with red-hot irons; making extensive incisions in operations for fistulous withers and "poll evil;" castration of cryptorchids; spaying of bitches, and dozens of other painful operations which occasionally take an hour or more to perform, done without an anesthetic! These are acts of barbarism and should have no place in progressive veterinary science. Until we cease to think lightly of these things we should be slow in applying the term "quack," and "empiric" to practitioners who have not had the advantage of a college education.

There are several factors which no doubt tend to prevent the more general use of anesthetics in veterinary practice. Judging from what has been written by some authors, the use of anesthetics in veterinary practice is attended with a great deal

of danger. Finlay Dun, in his work on "Veterinary Medicine," states, that chloroform anesthesia is attended with more risks in veterinary than in human patients.

The same author speaks of horses dying from respiratory and cardiac arrest after being anesthetized with chloroform, as if it were not an uncommon occurrence. From what others who have had extensive experience have written, and from my own experience I am inclined to think that such unsatisfactory results have very often been due either to carelessness, or to a lack of knowledge of the proper mode of administration on the part of the anesthetist. Many contend that chloroform is too expensive to use in general operations, and that it cannot be safely given without the assistance of a second veterinarian.

With the proper kind of an inhaler, and at the present price of chloroform, the expense is very small; and, while it is much more convenient to have the anesthetic given by a professional assistant, it is not necessary, as one can both administer the chloroform and operate by having the assistance of ordinary attendants.

Again, some oppose the use of chloroform on account of the time occupied in its administration and the slow recovery of the animal from its effects. I believe our colleges (at least some of them) are not altogether blameless for this apparent indifference of many of their graduates in regard to using the knife upon our sensitive yet helpless patients. I do not think sufficient stress is put upon the subject to impress the student's mind with its importance. If students were given better opportunities of seeing the various operations performed under anesthesia, and if they were taught in detail the proper modes of administering the agents to the different animals, they would be less timid when they assume the responsibility of an individual practice, and would not only enjoy the benefits to be derived from the general use of anesthetics, but would command greater respect from their patrons, the majority of whom are opposed to the extreme suffering of their animals when operated on in a conscious condition.

As to the comparative value of the different anesthetics in veterinary practice there is a difference of opinion, but it is generally conceded that chloroform is the best agent for all the lower animals, the dog perhaps excepted. Whatever drug is

used, it should be *pure*. Dr. Archie Stockwell, in an excellent article published in Vol. XIV of the *American Veterinary Review*, states that neither clinical experience nor experimental research has been able to positively demonstrate the exact conditions in either man or animals to which any one anesthetic is specially applicable, or under which it can be most advantageously employed, for the information extant is almost wholly made up of negations. Each individual patient requires individual study, since what may be "meat" to one may prove "poison" to another; the final selection, if judiciously made, will be based solely upon the pathology of the disease, the physiological manifestations prone to follow the use of the anesthetic, and racial and individual idiosyncrasies. The same author, in a second article on this subject published in Vol. XV of the *American Veterinary Review*, states that chloroform should be preferred to ether in aged creatures, which, as a rule, bear chloroform better, especially as ether may induce pulmonary troubles.

In operations about the mouth or respiratory organs, where the actual cautery is to be used, ether is inhibited by its inflammability. In cases of lung infection and where absolute muscular relaxation is demanded, as for the diagnosis of tumors, reduction of luxations, etc., chloroform is vastly superior to ether.

In certain abdominal operations, such as herniotomy, and in cases where venous engorgement is a decided advantage, as in the ligation of large arteries, chloroform is to be preferred. Chloroform is also preferable when an anesthetic is required to be frequently exhibited to the same individual, man or animal, the Class, *felidae* excepted. Where degenerative disease of the heart, or kidneys exists, or both, as they are associated and interdependent more often than is commonly imagined, providing there is no serious pulmonary complications, ether should by all means obtain the preference. When pulmonary disease exists, without renal or cardiac complication, the morbid condition becomes *per se* an element of safety in the administration of chloroform, while it inhibits the employment of ether.

When death is caused by the administration of an anesthetic in too great a quantity, it is generally due, especially in

the lower animals, to respiratory arrest. But that death is sometimes caused by cardiac paralysis there is no doubt, especially in the dog, following the use of chloroform.

Uengar discovered that animals, especially canines, chloroformed for several hours at a time and upon successive days, showed upon autopsy indubitable evidence of fatty degeneration of (1) the heart, (2) kidneys and muscular structure, and (3) gastric and mucous membranes generally.

Strassman, as a result of independent experiments, corroborates Uengar and sums up his researches as follows:

1. After chloroformization in dogs there can be demonstrated a fatty metamorphosis of the liver; the heart may partake of the same changes as a secondary result; other organs are seldom affected. The changes consist of true fatty degeneration and not of fatty infiltration.

2. Subsequently to the usual chloroform narcosis, and when recovery therefrom has apparently taken place, a fatal result is occasionally observed.

3. Inasmuch as in the fatal cases the heart changes were found to be particularly well marked, these latter may reasonably be assumed to have been the cause of death.

4. In non-fatal cases the evidence of degenerative changes are not found after several weeks.

5. These changes are particularly prone to occur in those animals in which debilitating influences, as hunger, loss of blood, etc., can reasonably account for the susceptibility to the undue action of the anesthetic. In young and vigorous animals a greater power of resistance counteracts a tendency to these changes.

Giving credit to the above experiments, it is apparent that chloroform anesthesia produces a marked effect upon the dog, and, I think, we may safely conclude that ether, or a mixture of alcohol, chloroform and ether is a safer anesthetic for this animal.

In my experience with anesthetics in dogs, I have nearly always used the A. C. E. mixture—one part of alcohol, two of chloroform and three of ether, with the happiest results, I do not know the exact number of dogs I have anesthetized with this agent, and while my canine practice is very limited compared with that of some veterinarians, yet I have spayed

about fifty bitches, castrated a few males and done other operations under anesthesia, so that I think I have given it to dogs about seventy-five times, without a fatal result.

In anesthetizing the dog, I use a funnel-shaped bag made of gum-cloth, the same as is used for making storm-cloths for carriages. Upon a few occasions, temporary respiratory arrest has occurred. In these cases normal respiration resumed after the removal of the bag from the nose, a little shaking and a back-and-forward movement of the fore limbs. More difficulty was experienced in one case. It was a setter dog that was being anesthetized for the purpose of amputating the tail. The dog struggled violently as soon as I put the muzzle to his nose, and instead of removing it and giving him a little air, as I should have done, until he quieted down and became accustomed to it, I held it to his nose until he quit struggling, when I noticed that he had also quit breathing. I shook him, pumped his legs and pulled out his tongue, and yet he appeared lifeless. I then stepped to the pump a few yards away, pumped some water and dashed it upon his head, and yet he did not resume breathing. I opened my case and from the aqua ammonia bottle poured a few drops into my patient's mouth when, to my delight, he began to breathe and I proceeded to cut off his tail. This, no doubt, was very close to a fatal result. At that time I had not had much experience in the use of anesthetics and I consider the trouble was due to me, and not to the anesthetic. I am satisfied that one should not be in too great a hurry in anesthetizing dogs, if we would grant them the greatest degree of safety.

In my experience with cats, I have found chloroform to act nicely. I have chloroformed them for castration, stitching wounds, removing foreign bodies and decayed teeth from the mouth, etc., and simply use a little cotton-batting saturated with the agent, being careful not to hold it too close to the nose.

To hogs I have administered chloroform for such operations as gastro-hysterotomy, castration of cryptorchids, operations for diseased scrotums resulting from improper castration, scrotal hernias, removal of tumors, etc. In giving the chloroform I use cotton-batting without any muzzle or sack, and I find that hogs take chloroform nicely if they are given a

little air during its administration. During the last summer two hogs that I was operating on under anesthesia died, and I regret that I did not make postmortem examinations to ascertain if possible the cause of death. The first was a boar that weighed about eighty pounds, and had a large scrotal hernia. An assistant caught him when he was running with others, and pulled him by the legs several rods to a shed, where the operation was performed. I gave the chloroform and, after a struggle or two, the hog became quiet and I took the anesthetic from his nose, and operated on him, doing the *covered* operation and using a ligature instead of a clamp. When I had nearly finished washing, etc., I saw he was dying, and I could not prevent it, notwithstanding my efforts.

The second case was a rather small pig with a diseased scrotum, following castration, complicated by a bad hernia, the whole mass being as large as a man's head. Consequently, the operation was prolonged and my assistants renewed the chloroform several times. When we had finished the operation the respirations were shallow; the pig lived only a few minutes.

In the first case, the hog inhaled but little chloroform, in fact, much less than it usually requires to produce anesthesia suitable for such an operation, and as he breathed for twelve or fifteen minutes after the chloroform had been removed, I can scarcely account for his death. He may have been injured in his struggles, while being brought to the place of operation, or his death may have been due to a too sudden inhalation of the chloroform. In the second case the pig was not very strong and the operation occupied some time, thus requiring a great deal of chloroform and, as its administration had to be left largely to the men who were assisting in the work, it is quite probable that the pig received too much. If due care be taken, hogs can be chloroformed with but little risk. Young pigs take but very little of the drug before they become unconscious.

I have heard it stated that horses are less susceptible to the effects of chloroform than are all other domesticated animals, but my experience does not corroborate this. I have found that cattle offer a greater resistance and are anesthetized with greater difficulty. In painful operations on horses and

cattle I nearly always use an anesthetic, if the nature and seat of operation will permit.

If the desired effects can be attained by producing local anesthesia I use *cocain*, which in my opinion is a very valuable addition to our materia medica. It is surprising the number of operations that the use of this agent renders painless which otherwise would be very painful unless a general anesthetic were used; very often it saves the trouble of casting the animal. Operations upon the feet and eye; trephining the sinuses of the head; removal of tumors, if not too large; neurectomy; many cases of firing, etc., can be done under the effects of cocain. If a local anesthetic be impracticable, I use chloroform, and I find that animals that have undergone serious operations when under the influence of an anesthetic, are free from the shock and constitutional disturbances which are so often seen when such operations are performed during consciousness.

In administering chloroform to horses and cattle it is economy of both time and money to administer it in a tolerably concentrated form; and yet if there be not some provision in the inhaler to allow the escape of impure expired air, the animal is apt to suffer afterward from some lung affection, especially if the anesthesia has been prolonged for a considerable length of time.

Two or three years since, in talking with a prominent veterinarian in regard to this subject, he said that he had almost discarded the use of general anesthesia, on account of pneumonia following. The same veterinarian mentioned another prominent practitioner whose experience had been similar. Upon making inquiry as to the kind of inhaler they had used, I was told that it was nearly similar to the one I use, except that it was not supplied with holes and a button on the end.

As I have used my inhaler several years on, perhaps, a couple of hundred animals, and have never had a case of pneumonia or other complication follow, I conclude that the holes in the end of the inhaler and the button so arranged that the holes can be opened during the expiratory act, thereby permitting the escape of the impure air, are a big improvement.

In administering the anesthetic, if the animal struggle violently when it first smells the drug, as it is quite apt to do, I turn the button so as to admit a little fresh air when, usually, a quieting effect is produced; then I turn the button so as to close the holes. The air now being excluded as far as possible, the animal soon yields to the effects of the drug, when I alternately open and close the holes during expiration and inspiration, so as to get rid of the impure air and prevent its being inhaled repeatedly. After the desired condition of anesthesia is reached, I turn the button so that the holes are open and, if I think the operation is going to occupy much time, I pour in a little more of the drug. In this way the patient is getting some pure air and at the same time is inhaling the anesthetic. With this apparatus it is not difficult to both operate and give the anesthetic, with the assistance of ordinary help.

The time occupied in producing anesthesia, and the amount of the drug used, vary with the age and peculiarities of the animal. Yearling and two-year-old colts usually require one to two ounces for short operations such as castration, and the time taken to anesthetize them is from one to five minutes. Older animals usually require more of the drug and cattle take more than horses. Two or three times I have tried to kill horses with chloroform and after using several ounces and taking considerable time I have had to resort to other methods. I do not wish to be understood, however, as claiming that horses cannot be killed by the inhalation of chloroform; neither do I recommend the careless use of it, for some individuals are much more susceptible than others and we should always be on our guard.

To me this is a subject of great importance and one, I think, that has been sadly neglected, and if what I have written has the effect of producing a stronger feeling of sympathy for our patients, so that all painful operations will, as often as possible, be done under an anesthetic, I will feel amply repaid for my trouble. In conclusion, if any veterinarian desires an "inhaler," I will have one made and sent to him *at cost*.

TREATMENT OF CARTILAGINOUS QUITTOR.

By Professor H. J. DETMERS.

I have read with special interest the description of the "Operative Treatment of Cartilaginous Quittor according to the Method of Bayer," in the January number of the *Veterinary Magazine*, and I am sure every reader of the magazine will thank Dr. Harger for his laudable efforts to make them acquainted with the great achievements in Veterinary Surgery on the European continent. Still, as far as this operation is concerned, I wish to make a few remarks, which, perhaps, may be of some interest to the younger members of the veterinary profession.

The operation, as performed by Bayer and Fröhner, certainly is an elegant one, and in many respects far in advance of the old "Javart-operation" of La Fosse. It is an operation, which not only enables the operator to show his surgical skill, but also one of great scientific interest, at least in so far as it demonstrates what can be accomplished by modern methods. At the same time, however, the experienced practitioner may be allowed to ask: (1) Is it necessary? (2) Can it be successfully performed by a practicing veterinarian, no matter how great his operative skill, unless he is able to avail himself of all the facilities of a well-equipped hospital? (3) Is anything to be gained by this (rather heroic) operation? All three questions I must answer in the negative, but not to be misunderstood, I will say again that just such articles should find a place in a first-class veterinary magazine.

(1) The operation is not necessary, because the same favorable result, reported by Fröhner, can be obtained with much less trouble by other methods, which are less heroic, less expensive and easier applied by a common practitioner, at any rate by one which I have used for many years and which I will briefly describe further on.

(2) The operation can not be successfully performed by a large majority of practicing veterinarians, because there is hardly one in a hundred who has at his disposal all the facilities of a well-appointed hospital, including the necessary more or less trained help.

(3) As far as I can see nothing is gained either in time and risk or in saving expense to the owner of the animal. On the contrary, such an operation, unless performed for the love of operating or for the purpose of demonstrating what can be accomplished by the surgical knife before a class of students, for instance, necessarily makes the treatment an expensive one, may be even to such an extent that the cost of the treatment will exceed the value of the horse, especially at present prices, and if it is taken into consideration that an operated horse will never again have the full market-value of a sound animal.

Actuated by a desire to assist the younger veterinarians to whom complete hospital facilities are not available, I will draw attention to a simple, reliable and comparatively inexpensive method of treatment, which, in my hands, has never failed to bring a fistula of the cartilage of the hoof to permanent healing, except where the destruction extended to, or had opened, the hoof-joint, and where the operation, too, would be useless. In the following I will give a brief description of this method of treatment, in which corrosive sublimate is made use of instead of the surgical knife, *i. e.*, to destroy everything that is morbid and nothing else, by applying it in such a way that it will not penetrate healthy tissues and cause destruction where it is not wanted, provided the attending veterinarian exercises a little good judgment.

1. The form in which the corrosive sublimate is to be applied: I take from half an ounce to an ounce of finely-powdered corrosive sublimate, half an ounce of powdered gum acacia and one ounce or a little more of distilled water; mix all three thoroughly in a glass mortar until the acacia has become dissolved and until the mixture presents a uniform, semi-fluid mass, which I then pour into a large test-tube. This done, I take good cotton cord, about one-eighth of an inch thick, cut it into ends of suitable lengths, say, of about twelve inches, and fasten to one end of each of the short cords a pin bent so as to form a hook. I then dip the free ends of my cords, one by one, into the sublimate-mixture in the test-tube, which latter, of course, must be kept in a perpendicular position, and, as soon as dipped, hang each cord with its hook-shaped pin on a line (a thin cord fastened at both ends and stretched horizontally between two fixed points)

to dry. As I usually prepare more than a dozen cords at the same time, the one dipped first is often sufficiently dry to be dipped again after the last one has been dipped the first time, but before I dip the second time I always shake up my mixture in the test-tube, because the corrosive sublimate is too heavy to be kept in suspension by the solution of the gum acacia for a sufficient length of time to dip all the cords over and over again. In this way I dip every cord as many times as may be necessary to make it coated with a thick and uniform layer of the sublimate-mixture. The whole process resembles that of making old-fashioned tallow-dips. After my cords are perfectly dry, I cut the sublimate-coated ends into suitable lengths, and those not immediately needed are packed away for future use. They will keep indefinitely and are also very useful in the treatment of some fistulae in other parts of the body.

2. Concerning the patient: I first carefully probe the fistulous canal or canals, so as to learn its, or their, exact extent and direction and, taking into consideration the external condition, swelling, etc., to be able to estimate to what extent and degree destruction and degeneration have progressed. I then thoroughly cleanse the whole foot with soap and warm water, and if it is found that the outer opening of a fistulous canal is higher than its interior termination, I do a little cutting, just enough to make it lower, and, according to circumstances, a little paring with the hoof-knife. This done, I insert as far as necessary (I have ascertained the extent of each canal by probing) one of my sublimate-coated cords into the fistulous canal, or, if there are more, one into each of them. This is very easy, because the cords are sufficiently stiff, and yet somewhat flexible. If my cord or cords are too long, as they are apt to be, I clip off enough with a strong pair of scissors so that none projects out of the fistulous opening more than a quarter of an inch. Having the cords inserted I cover the whole outer surface of the diseased part with a bunch of absorbent cotton, and then, to protect and to keep everything in place, I apply over the whole foot and coronet a strong bandage. This latter, unless it becomes displaced, as it sometimes will, may be left on for three days, after which time it should be removed together with the absorbent cotton and the cord or

cords which have lost their coating. After this the diseased parts have to be dressed at least once a day (twice a day is better) with iodoform, absorbent cotton and a bandage. In a few days more the tissues destroyed by the corrosive sublimate and the exudates with which it has formed a combination, will come out in shape of a more or less firm tube. If the wound looks clean and no pus is visible, a dressing once or twice a day with iodoform, absorbent cotton and a good strong bandage will be all that will be needed to effect a healing. If, however, the wound or wounds present an unhealthy appearance, or pus is yet produced, new sublimate-coated cords have to be inserted and the whole treatment has to be repeated. Of course there will be cases in which slight modifications are indicated, but these will not require any description, for they will suggest themselves to every veterinarian familiar with the first principles of surgery.

The average time in which, by the treatment just described a healing will be effected, is not any longer than that required after the improved "Javart-operation" of Bayer and Fröhner, and in many cases it is considerably shorter, because less tissue is lost. It must, however, be kept in mind that, *ceteris paribus*, a healing will be effected the sooner, the further forward the fistula, and *vice versa*, because the morbid process invariably progresses from backward forward.

MEDIAN NEURECTOMY.¹

BY SIMON J. J. HARGER,

Professor of Veterinary Anatomy and Zootechnics, University of Pennsylvania.

Median neurectomy, as the name indicates, signifies a resection of the *median* nerve-branch of the brachial plexus.

Historical.—The history of the operation dates back to 1885, when it was performed by Peters, of Berlin. Since then it has been practiced by various specialists in surgery, but even to-day is not applied in general practice, although the results reported have been very favorable. This paper is based upon the author's personal experience, as well as upon information collected from reliable sources.

¹ Read before the Philadelphia Society of Veterinary Medicine.

Anatomical Relations.—On the inner side of the forearm, and below the elbow joint, we find the following anatomical layers : the skin—supple and wrinkled transversely, the subcutaneous tissue, the lower border of the sterno-aponeuroticus muscle and its fascia of insertion spreading over the forearm, the anti-brachial aponeurosis, recognized by its dense, fibrous and pearly aspect ; finally, the internal border and posterior face of the radius, in front, and the internal flexor muscle of the metacarpus behind, in the interspace between which pass the median nerve and the posterior radial artery and vein ; the nerve superficial and anterior to the vein and the artery deep ; sometimes the nerve lies superficial to the vein.

The nerve passes downward along the posterior face of the radius to above the carpus, where it divides into two terminal branches : the internal, constituting the internal plantar nerve entirely, and the external branch, which forms the plantar nerve of that side only after uniting with a smaller branch from the ulnar nerve.

The sensibility of the deeper tissues of the inner half of the foot, from the knee to the os pedis, is entirely furnished by the branches of the median nerve, while of the outer half it is furnished only in part by this nerve. Hence, section of the median nerve is not always followed by a complete disappearance of sensation and lameness when the lesion extends to the outside of the foot. To overcome this it has been suggested to resect both the median and ulnar nerves, a procedure, in my opinion, very hazardous. Another important fact is the emission by the median of a large nerve trunk immediately below the elbow-joint to supply the posterior radial muscles, and below which the resection must be made.

Operation.—The instruments required are a pair of curved scissors, straight and probe-pointed (neurotome) bistouries, retractors, two dissecting forceps, artery forceps, grooved director, needle and suture material, sponges and antiseptic solutions.

The patient is cast upon the side of operation. The upper leg is drawn backward and fastened to the hind canon, while the under, liberated from the hobble, is drawn forward with a sideline to expose the inner side of the forearm. The skin of the axillary region should be thoroughly washed the day before with soap and afterward 1 to 500 bichloride solution. The

hairs are clipped off with a pair of scissors, the skin over a square area shaved at the seat of operation and cleansed as on the day before.

(1) *Incision*.—A vertical incision, about one to one and a half inches long, is made over the groove, recognizable with the finger, immediately behind the internal border of the radius and parallel with the latter. It commences above from a transverse line tangent to the edge of the tendinous insertion of the biceps muscle upon the bicipital tuberosity. The advantages of these landmarks which I propose is that the biceps tendon can be readily located with the fingers, and, besides, this will cut the nerve below where it gives off its large posterior radial branch. Transverse branches of the subcutaneous vein of the forearm must be avoided.

The incision successively involves all the tissues down to the radial aponeurosis; a small puncture is made at the lower angle, the grooved director inserted, and this aponeurosis is incised upwards; the wound is separated with the retractors or dilator, the flexor muscle protruding from the gap. The hemorrhage is of no consequence, and from the small branches is arrested with the artery forceps. Sometimes a tourniquet is useful, not only to arrest hemorrhage, but also to benumb the sensibility. The radial aponeurosis must be incised with care, so as not to puncture the posterior radial veins.

(2) *Resection of the Nerve*.—This is accomplished with the dissecting forceps; the flexor muscles being pushed backward, the nerve can be seen lying quite superficial in the interspace. Care must be taken not to injure the artery or the vein. Being well isolated, the director is passed under from behind forward, between the nerve and the vein, the section made with the tenotome or neurotome and as large a portion as possible removed.

The position of the nerve is variable, sometimes superficial to the vein, in which case it is the first structure met, sometimes posterior to the vein. At any rate, it is not far from this incision, and can be recognized by its volume and nerve-tissue peculiarities. If the animal struggle much, a solution of cocain may be applied to the nerve.

(3) *Suturing*.—All bleeding must be thoroughly arrested and the operation-wound thoroughly cleansed with antiseptic applications. Open-wound treatment is abandoned here. Two

sets of sutures are inserted : two or three deep of catgut threads for the radial aponeurosis alone, and as many superficial, taking in the other aponeurotic and cutaneous layers. It is beneficial to apply a bandage covering the axilla and upper part of the forearm.

A certain amount of inflammatory swelling forms around the incision, but disappears in about ten days. If cleanliness has been scrupulously observed, cicatrization by first intention can be obtained ; if this is not observed, an abscess may form, which is especially favored—hence to be avoided—by the abundance of connective tissue around the nerve.

After-treatment.—The dressing should be removed and the area of operation cleansed daily. In about one week the sutures must be removed, and a week afterwards the cicatrization is complete if there is no suppuration.

After the animal is allowed to get up he supports himself upon that member as upon the sound one. Locomotion is not interfered with, and he can walk and trot with ease. In those cases in which there is dragging of the foot and want of flexion of the knee, the nerve section has been made too high, and has included the posterior radial branch; hence, paralysis of the corresponding muscles. The axis of the member, if altered, gradually corrects itself.

The animal should have absolute rest for about three weeks, light exercise for another week, and be then gradually accustomed to his usual work. I believe that it is essential to success, in many instances, to give prolonged rest after the operation. The tissues (tendons and ligaments), whose sensibility has been destroyed, are more or less elastic and vascular; if the horse be worked too soon, before the disturbed vasomotor changes in the foot, the result of the nerve section, have been corrected by nature, and the tendons and ligaments become surcharged or overstrained at this stage, inflammatory changes are so much more readily excited, and in this condition can not be successfully combated. Hence, and not alone here, much of the success depends upon care after the operation.

Indications.—As in all recent innovations, the indications were very numerous, and success was anticipated in many instances where it was not justified. The essential point for ultimate success, and the greatest stumbling-block to the operator, is the selection of his cases and the determination in any

given instance of those conditions most likely to meet the conditions of the operation and avoid complications. The same precautions applicable to all neurectomies must be observed here.

The operation is contraindicated in all acute inflammatory lesions of the foot in which the vasomotor functions are disturbed.

Baldoni has employed it in shoulder-lameness, but this was evidently an *error in diagnosis*.

It has been employed against all chronic lesions *below the knee*, but is more especially indicated for those situated between the knee and the fetlock.

The principal alteration calling for median neurectomy, and here the operation has given the best results, is a chronic enlargement and induration of the perforans, the perforatus and the check ligaments, and generally accompanied by knuckling of the fetlock. We know how frequently, even after blisters and cauterization, the lameness in these cases persists. It is in these cases that the operation can be unhesitatingly recommended, and such animals will render good service for a long time, even if both members are affected. Reports of such cases are not wanting, but would be useless. In a few instances violent inflammation, evidently of a trophic nature, with enlargement of the tendons and lameness follows, but the successes are much in excess. The less the mechanical interference with the movements, the better will be the termination.

Exostoses of the canon or large *posterior splints* interfering with the actions of the tendons and suspensory ligament.

Chronic indurations of the suspensory ligament or the fetlock, and exostoses of the fetlock articulation, unless the lameness in the latter is mechanical.

Knuckling, but only by relieving the pain in the parts of which this condition is a secondary symptom, and by allowing the tissues involved to stretch gradually.

Navicular Disease.—This disease has been treated by this operation, and, according to reports, with quite favorable results, especially when complicated with lesions of the tendons and bones. It has removed the lameness in cases in which the latter recurred after plantar neurectomy. However, for simple navicular arthritis the low plantar operation is preferable.

Ringbones that have resisted cauterization, or when the animal is not of sufficient value to undergo such an operation,

which, at all events, does not give very satisfactory results. The exostosis often diminishes in volume; at times it may increase after a variable period.

Sidebones that have resisted other means, even when on the external side.

Diseases of the foot *without any apparent alteration* excepting of volume and form—navicular disease, contraction, etc.—with or without other appropriate treatment of the foot, such as dilating the heels, grooving the quarters, shoeing, etc.

Chronic laminitis.—In the last three conditions one can choose between plantar and median neurectomy, the former having the disadvantage of subsequent degenerative processes. The latter does not completely remove the sensibility of the foot, and we are not sure whether or not this fact has a compensation in lessening the tendency to retrograde changes in the tissues below the point of section. Certain phenomena of malnutrition have followed the operation, so as to place this in doubt.

Seat of the lesion.—More favorable when on the inside of the member.

Work.—More favorable in draft horses and those working at an ordinary gait.

Such is a resume of this operation and its indications. Many cases have been reported in support of what I have said, and its judicious application recommends itself in many cases in which other treatment has failed. Reports of any cases will be appreciated by the profession.

DIATHESIS.

BY T. D. HINEBAUCH,
Fargo, N. D.

However limited our knowledge of this subject may be, we are more or less aware that Diathesis is an element of importance in the successful diagnosis and treatment of disease, and more especially is this true in a country practice where the proper evidence is attainable.

The term diathesis is occasionally used in our text books, but in numerous instances so vaguely that but a faint idea can be gleaned therefrom. In the first place, it is necessary that

we thoroughly understand the term, that we may be the better enabled to make an intelligent application of it. We have all learned from practical experience that there often exists a proclivity, a proneness, a natural inclination, a predisposition, as it were, to disease, yet these conditions in many instances are ignored in instituting a course of treatment.

“Diathesis is a condition of the animal system, however induced, in virtue of which, the individual is through a long period, or usually through its whole life, prone to suffer through some peculiar type of disease.” Diatheses differ in their persistence or intensity. In some animals the effects are permanent, in others transitory, recurring at greater or shorter intervals of health. They are of two kinds—inherited and acquired. Diathesis does not denote disease itself, but a proclivity to disease, and should not be confounded with dyscrasia, which implies bad or ill health. These conditions very frequently have no connection whatever.

Inherited diathesis is often latent at birth; at other times it is present or makes its appearance shortly after birth. Tuberculosis in the calf may be present at birth, or the animal may present that peculiar conformation, which, to the practiced eye, will lead to the conclusion that the animal has descended from tuberculous parents. Rheumatism and catarrh are diatheses in the truest sense. They may be said to be universal, for there probably is no vertebrate animal that is entirely free from its effects. The evidence at hand necessary to convince us that rheumatism is a diathetic disease is abundant. Its predisposing cause, its symptoms, duration, termination, and results, collectively or individually, lead to the conclusion that the disease is founded upon other than accidental causes. Many cases of influenza or catarrhal fever, either have associated with them, or are the predisposing cause of rheumatism; or, rheumatism may appear as a separate and distinct affection, in which case it is designated rheumatic fever. Many joints are affected simultaneously and symmetrically, and all so affected suffer with equal severity. These joints are affected independently of one another and from a cause common to them all, as is evidenced by the metastatic condition of the seat of pain. If allowed to continue, all the joints of the extremities finally become affected, producing general stiffness of the whole body.

The careful practitioner, when he first notices any signs of this affection, investigates it and prescribes accordingly, knowing that he stands a much better chance of overcoming the disease at that time than if it be allowed to continue its course unchecked, until it becomes securely seated, as is often the case.

Closely allied to the rheumatoid diathesis (and I might say identical with it, as will appear later,) is the catarrhal diathesis. This is perhaps better marked in the sheep and horse than in any of the other domestic animals. In the human family it may be said to be universally present. Catarrh follows the slightest cold, and when the cause is severe, the mucous membrane of the respiratory tract is not all that becomes affected. The mucous membrane of the alimentary tract, the urino-genital organs, and the eyes may be, sometimes are, affected at the same time, and at other times separately.

Should we see fit to allow the term catarrhal a liberal interpretation instead of confining it to the usually accepted meaning, we can construct a large and perfectly natural group of maladies. I contend that the term should receive such a construction. It ought to be used to imply identity in cause and not similarity in result, as is the popular interpretation of the term. Where is there sufficient cause for calling all forms of inflammation of the mucous membrane, attended by free discharges, irrespective of their causes, which are often very widely different, catarrhal? On the other hand, if the word is used as I have indicated, we shall find it applicable to other inflammations than those of the mucous membrane. Any result following "catching cold" may then be termed catarrhal. Conditions which follow from other and dissimilar causes, however similar their results, ought not to receive that name. The inhalation of dust produces a discharge from the mucous membranes (commonly called catarrh). A "cold" produces like results. Here we have the same condition present, the result of two widely different agents. How about their treatment? Is it not as widely different as their causes?

Every organism possessing a nervous system must be supposed to be capable of manifesting catarrh, for its constituent qualities consist in proneness to inflammatory congestions,

excited in a reflex manner, through the influence of cold applied to the surface.

However, the susceptibility of the nervous system in this respect differs very greatly in different individuals. Articular rheumatism is none other than a catharrhal diathesis, affecting the joints and brought about in the same manner as any common cold.

All forms of catarrh pass off spontaneously after a time. When we find the results of catarrhal inflammation threatening to become lasting, we feel sure that the diathesis is a complicated one. It readily mixes up with other diseases, and tends to become a permanent condition, unless extra exertion be made to counteract its progress. This condition is very common in the human subject, and is frequently noticed in connection with horses, cattle, and sheep; the latter in particular is a frequent sufferer from this malady.

Returning to the rheumatoid diathesis or articular rheumatism, we find that it is induced by agents operating in a manner similar to that which produces catarrh. Their accidental causes are very closely allied; this is often noticed in the human subject. One person declares he must not sit in a draft or get wet, for a cold is sure to follow, while another informs us that, should the same conditions be presented, he is sure to suffer from rheumatism; two different affections, so called, the result of like conditions.

Their accidental causes are very closely allied. In rheumatoid arthritis, there is a slight increase in the fluid secreted. This is a condition analogous to that observed in ordinary catarrhal affections of the mucous membrane of the respiratory tract. Rheumatism, like catarrh, is also transitory, especially in young animals; however, in more aged animals there is a tendency for it to become chronic and localized, just what we notice in catarrh. Like catarrh it may mix itself with other diatheses, so that it is rarely found as a simple affection, but usually accompanying some other pathologic condition. All of us who have had a varied practice can, no doubt, call to mind horses that have become incurably lame while suffering from catarrhal fever, and which can be traced to no other cause. If the symptoms in such a case can be carefully noted, we will readily see in them during the earlier

stages the typical signs of rheumatoid inflammation, which has a tendency to locate permanently in some of the joints, especially the coffin-joint.

A case of this kind came under my own observation, and illustrates fully the need of particular attention in such cases. The subject was a gray mare, ten years of age, belonging on the farm at my home. This mare, after catching cold, would evince a general stiffness for several days, gradually coming round all right.

During the epizootic of '72, she became attacked with that disease, having well marked symptoms. After two or three days she showed general stiffness, which finally located in the fore feet, producing as well-marked a case of navicular arthritis as I have ever seen. I will state that the mare afterward dropped two foals to the cover of as many stallions, one a Percheron, and the other a Clydesdale, and by the time the foals were seven years old, both of them had navicular arthritis—in both instances following a well-marked attack of catarrhal fever.

Should the history of the animal show that there was a tenderness of the feet, that there had been soreness present on one or more occasions, it would be well for the practitioner in cases of influenza or catarrhal fever, to direct his attention and energies toward diverting its influence from such parts.

In the discussion of this question, I do not want to be understood as claiming that catarrh and rheumatism are one and the same disease, but rather that they are due to the same cause, and could both be properly classified as catarrhal.

INOCULATION.*

BY S. G. BURKHOLDER.

In discussing this subject I will not endeavor to express any theories of my own, but will give a brief history of the important discoveries that have been made in serum-therapy. First, however, let us consider inoculation independent of serum-therapy.

* Read before the Schuylkill Valley Veterinary Medical Association.

Inoculation is the insertion of pathogenic germs or their products into the system. This insertion may be voluntary or involuntary. Voluntary inoculation is practiced with a view of preventing, curing, or retarding the course of contagious disease. In this manner it is used as a therapeutic agent.

Involuntary inoculation is constantly taking place. Everything that inhales air takes in fine particles of solid matter from the atmosphere. Of the dangers of these particles the greatest are due to the minute forms of vegetable life called germs or microorganisms. They are so small that a particle of dust barely visible to the naked eye may be the bearer of myriads of them. Fortunately, most of them are not only harmless, but are considered of great value in the economy of nature. There are, however, a few species of bacteria that cause dreaded and widely-spreading diseases, some of which are undoubtedly contracted by inhaling bacteria floating in the atmosphere.

Bacteria do not become detached from the materials to which they adhere or on which they grow so long as these are moist. When dry and ground up the bacteria masses comport themselves in the air just as other particles of dust. The *bacillus tuberculosis* is found in the dust that blows about our streets. The saliva of man and animals suffering from consumption swarms with bacteria. The saliva is dropped on the floor or ground, where it dries, and the germs are left free to float in the air as particles of dust, and we cannot avoid inhaling them. For some reason, not thoroughly understood, it will not grow in the bodies of some persons and animals, but other persons and animals furnish the unknown conditions, and in them the *bacillus tuberculosis* grows readily and more or less rapidly.

Not all pathogenic germs float in the air and inoculate the system through the air-passages, yet pure air should always be considered the essential factor in the prevention and cure of disease.

The importance of inoculation was recognized in the East at a very early period; the Chinese have practiced this since the sixth century, and the Brahmins from very remote antiquity.

In Persia, Armenia, Scotland and Wales it was practiced many years ago. It was not thoroughly established, however,

for more than a quarter of a century after its introduction, for it met with violent opposition both from the medical profession and the clergy. Finally the royal families took an interest in its propagation. In 1717, Lady Mary Wortley Montague, of England, wrote a letter which had the effect of spreading the practice. In the letter she wrote:—"The smallpox, so fatal and so general amongst us is here entirely harmless, by the invention of engrafting which is the name they give it. Every year thousands undergo the operation. There is no instance of anyone who has died of it, and you may believe that I am well satisfied of the safety of this experiment, since I intend to try it on my dear little son." Another instance of royal encouragement took place when Carolina, the Princess of Wales, had two of her children publicly inoculated, which gave a sanction to the practice.

The great drawback to inoculation proved, however, to be this: while it was invaluable to him who underwent the operation, and completely guarded him from the natural disease in its severe form, its effect upon the community-at-large was extremely pernicious in keeping alive the natural disease, and increasing its spread among those who were not protected by inoculation. While one in five or six of those who took the natural disease died, the average number of deaths at the inoculation hospitals was three in one thousand. The deaths from this disease amounted to ninety-five in one thousand during the last thirty years of that century; so that notwithstanding the preservative effects of inoculation on almost all who were operated on, the total number of deaths from this disease increased in one hundred years in the ratio of about four to five. These and other statistics show that the benefits which were expected from inoculation were far from being realized, and smallpox would doubtless have gone on increasing in its destructive power if it had not been checked by Jenner's invaluable discovery of vaccination.

The discovery of a preventive serum-therapy for smallpox led to further investigations on other contagious diseases, with varying success. The diseases in which it is now an established success are: smallpox, hydrophobia, and diphtheria in man, and anthrax in animals. Cancerous growths and tetanus have been experimented on with encouraging results.

In contagious diseases which do not create an immunity, inoculation is practically useless, as was fully demonstrated by the experiments on hogs for swine-plague by Drs. Salmon, Billings and others. The inoculation of tuberculin and mallein in tuberculosis and glanders respectively is done simply as a diagnostic test.

Smallpox.—Previous to the discovery of vaccination by Jenner, the inhabitants of the Old World had a form of inoculation different from the one practiced today. The serum of varioloid vesicles was taken after the eighth day and was inserted beneath the skin of those who had not previously suffered from smallpox. This gave rise to the following symptoms:—(1) Inflammation ; (2) at the end of six days there was fever similar to that of smallpox ; (3) after the lapse of three more days, there was a more or less abundant eruption of pustules. The disease thus produced was called “inoculated smallpox.” The disease produced in this artificial manner was simpler and less dangerous than the one of natural inoculation, and gave immunity, but the individual was a fruitful source of contamination to those not protected by inoculation.

The discovery of our modern form of vaccination by Edward Jenner, of England, in 1796, put an end to this dangerous practice. It was rather a peculiar incident that directed Jenner to make the investigations that resulted in the discovery of this prophylactic power. While discussing the subject of smallpox with his tutor in the presence of a young country woman, she remarked: “I cannot take that disease, for I have had cowpox.” This was before the year 1770. Twenty-six years afterward his experiments were first applied in practice. The practice met with violent opposition at first, but the results proved so convincing that it was soon promulgated throughout the civilized world. The remarks of the young lady before mentioned led Jenner to collect the lymph contained in the pustules of cattle suffering from cowpox and to experiment on animals and men.

Variola Vaccinia, or cowpox, in cattle is a contagious, febrile and eruptive disease, due to a specific virus. Eruptions develop on the mammary gland, which vesicate in about a week or ten days. Vaccine lymph should be collected only

from the matured vesicle and should contain neither pus nor blood. This lymph should be preserved in capillary tubes.

Hydrophobia is a contagious disease transmitted by a virus contained in the saliva of an affected animal. To M. Pasteur belongs the honor of having discovered the means of preventing the disease from running a fatal course by inoculation. He discovered in the medulla oblongata and anterior part of the spinal cord, a virus capable of cultivation. It is from this nerve-matter of affected animals that he prepared his substance for inoculation. If this substance be exposed to the air, it will gradually lose its virulency, and in about fifteen days become inert.

His treatment consists in successive inoculations of portions of nerve-matter, containing the virus from a rabid animal, which virus has been exposed to the atmosphere for thirteen days, ten days, seven days, and four days, until virulent matter which will produce rabies in an unprotected animal can be inoculated with impunity. This treatment requires about fifteen days, and is very successful, but dare not be delayed more than ten days.

Diphtheria.—The latest achievement in the line of serum-therapy, accepted and established by the medical profession, is the prevention and cure of diphtheria by means of diphtheria *antitoxin*. The technique of the development of the antitoxin is as follows:—bacilli are taken from a patient suffering from diphtheria and after these have been proved to be the diphtheria bacilli, they are placed in broth. After six weeks a new crop has formed. A small number of these bacilli are injected under the skin of the animal to be rendered immune. This dose is repeated and increased from day to day, until the virus ceases to have any perceptible effect on the animal. The immunity thus produced is the result of the development in the blood of some substance (antitoxin) which has the power of neutralizing the poison (toxin) produced in diphtheria.

This antitoxin is obtained by withdrawing a certain amount of blood from the circulation of an immunized animal. The serum thus obtained is injected underneath the skin of a person who has been exposed to the disease, as a preventive; and of the one suffering from diphtheria, as a curative agent. In the

latter case, the antitoxin thus introduced neutralizes the toxin absorbed from the throat, and thus renders him artificially insusceptible to its action. The duration of this immunity is as yet a question of doubt.

Anthrax is a contagious disease, affecting most animals. It exists in all parts of the world. It is caused by the introduction into the body of a germ, usually with the food. However, the sources are innumerable. The disease runs its course in a few hours, and therefore treatment is very unsatisfactory. Prevention is the only means of eradication. A preventive agent was discovered by the late M. Pasteur. In 1876 he began his investigation of the *bacillus anthracis*, and on February 28, 1881, he communicated his great discovery to the Academy of Sciences, at Paris. From that day, the practice of vaccination against anthrax was established. Pasteur's system of vaccination against anthrax is as follows: two inoculations are made, the first preparatory to the second, made twelve days later. The injection is made into the neck or shoulder of cattle, horses and mules, and on the inside of the thigh of sheep and goats. The dose for the former is about one-quarter c. c., and for the latter about one-eighth c. c., of the vaccine lymph. This, being a preventive remedy, should, to insure its full effect, be practiced upon healthy animals, that is, upon herds that are not already under the influence of the disease. Diseased herds have, however, been vaccinated with good results. It will not prevent the death of animals already impregnated with the anthrax bacillus. Millions of animals are today inoculated, and hundreds of thousands of dollars are annually saved to owners and breeders of live stock.

Chicken Cholera in fowls has been experimented on by Pasteur with the same good results. Once inoculated, they are afterward immune to the disease.

Cancer.—The treatment of cancer by inoculation has been tried with varying results, by Emmerich and Scholl. They obtain their serum from sheep immunized against the streptococcus of erysipelas. While the results in some cases were remarkably successful, in others they were not able to effect a definite cure. The results have been encouraging enough to raise the belief that a treatment may soon be found which may lead to the cure of malignant growths.

Tetanus is another disease that has been beyond the control of medical science thus far. Previous to 1886 it was not known to be due to a microorganism. The germ was discovered by Niccolai, and has been isolated, cultivated and verified by inoculation. It is principally found in the superficial layers of the ground. On the surface of the earth it is destroyed by the air and the rays of the sun, and a few centimetres beneath it may live indefinitely. Owing to its anerobic character, it must be cultivated in a receptacle from which the air is excluded or in which the latter is replaced by hydrogen.

Tetanus antitoxin is obtained from animals immunized from the disease. This immunization is brought about by repeated inoculations with modified tetanus toxin, increasing the dose until the animal is able to bear very large doses. Experiments with tetanus antitoxin have been very encouraging. It has been employed in human and veterinary practice with good results, but should be used before the symptoms of the disease appear. I do not believe that it will establish a permanent immunity, since in my own experience I have had a horse to recover from a chronic attack of tetanus, and about a year afterward to succumb to an acute attack; this goes to prove that immunity is only temporary.

Influenza in horses has been treated with repeated inoculations of serum derived from the blood of horses that had previously been affected, with encouraging results. While it did not altogether prevent horses that were exposed to the contagion from contracting the disease, it nevertheless had the effect of mitigating its course, and lessening the fatality.

There are two other serum preparations which are neither preventive nor curative, but serve as diagnostic agents; these are Mallein and Tuberculin.

Mallein is the culture of the *bacillus malleus* in glycerin bouillon, filtered through Chardin's paper and diluted with eight or ten parts of phenicated water 5 to 1000. Of this preparation two to two and a half c. c. are injected subcutaneously at the side of the neck or behind the shoulder of the suspicious horse and if he has glanders a characteristic reaction occurs. A hot, tense and very painful swelling forms after some hours at the seat of the inoculation, continues to

enlarge for about thirty-six hours, then gradually decreases, and entirely disappears in from eight to ten days; the general condition of the animal is also affected. There may be chills, tucking up of the flanks, increased respiration, coat staring, anxious countenance, disinclination to move, and indifference to all surroundings. The temperature always rises from two to five degrees F., and reaches its maximum between the eighth and fourteenth hour after the injection. These symptoms are very persistent and may last for forty-eight hours. The temperature of the animal to be tested should be taken before the injection and at least every three hours afterward for about forty-eight or fifty hours. In horses not affected, there is no constitutional disturbance and generally no local swelling; if any, it will disappear in a short time.

Tuberculin or Koch's lymph, consists of the concentrated, sterilized liquids in which the *bacillus tuberculosis* has been cultivated. It contains no living bacilli, as all germs have been killed by heat, but it does contain the chief poisons which the bacilli produce and which bring about the diseased processes in the body. Tuberculin containing no living germ, can neither increase its own substance, nor cause tuberculosis in a healthy system. Tuberculin causes a painful swelling at the seat of inoculation, and a rise of temperature with other constitutional symptoms, as by mallein in the glandered horse. The reaction under these agents may be explained as follows: The dose is so small that it will not affect the healthy animals, under ordinary circumstances. The slightly diseased system contains a certain amount of the chemic poison which the bacilli secrete, but to this the system has become accustomed, and it causes hardly any perceptible fever. But when in addition to this we introduce into the system a small quantity of the poisonous product of the bacilli used for the test, the increased quantity acts on the diseased tissues and nerve-centres alike and fever and the other constitutional symptoms are the result. The results lately achieved by the antitoxic method of treating infectious diseases, are remarkable. Reports from foreign specialists show that specific curative properties are possessed by the serum of animals rendered immune to streptococcus infection. The serum of animals thus rendered immune has been used with success in the treatment of

erysipelas, purpura and other diseases due to streptococci and staphylococci.

A realization of our hopes based upon the advances already made in the domain of serum-therapy will place the treatment of disease upon a scientific plane which it has hitherto not occupied.

REGULATION OF VETERINARY PRACTICE IN NEW YORK.

The New York law relating to the practice of veterinary medicine and surgery was greatly extended in its provisions in 1895. A State board of veterinary medical examiners was established, to consist of five members. Candidates for examination must be more than twenty-one years of age; of good moral character; have acquired general education; have studied veterinary medicine not less than three full years, including three satisfactory courses, in three different academic years, in a veterinary school registered as maintaining at the time a satisfactory standard; have received a degree as veterinarian from some registered veterinary school. The preliminary education required, which is that required as a condition to receiving a degree in veterinary medicine, is practically the same as that required of candidates for medical or dental degrees. The examinations are to be conducted by a regent examiner, who shall not be one of the veterinary examiners, from questions prepared by the regents from lists furnished by the members of the board of veterinary examiners, as required, covering comparative anatomy, physiology and hygiene, chemistry, veterinary surgery, obstetrics, pathology and diagnosis and therapeutics, including practice and materia medica. The examinations shall be exclusively in writing. The regents of the University of the State of New York issue the license to practice after the board of veterinary examiners have examined, marked and transmitted to them the answers. Every license must be recorded in the office of the clerk of the county in which the holder intends to practice. No person is allowed to practice veterinary medicine who has ever been convicted of a felony by any court, or whose authority to practice is suspended or revoked by the regents.

REPORTS OF CASES.

ASPIRATION PNEUMONIA FOLLOWING ABSCESS OF STENO'S DUCT.*

While pneumonia in the cow is a common result of particles of food and other material passing into the respiratory tract, yet the present case may be of interest, both as revealing an unusual origin of this disease and as indicating that early treatment is essential in any specific morbid process in the mouths of the lower animals.

It is well known that there exists normally in the mouths of animals, pathogenic bacteria which produce no evil effects whatsoever, so long as the animals retain a vigorous constitution; so soon, however, as the vitality is lowered, the bacteria are apt to invade the general system and become truly pathogenic in their host. Such appears to have been the case in the animal herewith cited.

The subject was a three-year-old cow, in which an abscess developed in Steno's duct, the infection doubtless taking place through the mouth, after the manner in which such ascending affections usually occur. The first symptoms were, falling off in the milk which persisted for four days, when an examination of the body revealed a small swelling on the left cheek. This spread rapidly downward toward the nostril, and also soon infiltrated the deeper tissues below the eye. The lachrymal duct became obstructed, and the usual symptoms attending such a condition supervened. Considerable exophthalmus developed, the eye protruding from the socket to an abnormal distance, and the conjunctiva was injected and swollen. After several days the animal refused food, emaciated rapidly, while the swelling gradually increased in size. Hot fomentations were applied, with a stimulating liniment, though with little effect. This condition persisted for about three weeks and actinomycosis being suspected, some of the pus was removed and examined at the McGill Pathological Laboratory for the fungus, with negative result. Soon the secretion of milk almost ceased, the condition of the animal remaining about the same. At the end of the third week fever developed, accompanied by

* Read before the Montreal Veterinary Medical Association, November, 1895.

chills, weakened pulse, fetid breath and drowsiness, with diarrhea. These symptoms progressively increased during the next three days, at the end of which time the animal died, four weeks after the first appearance of symptoms.

The *postmortem* showed a large abscess in Steno's duct, containing about three ounces of yellow, creamy pus, and the surrounding tissues softened and necrosed. Multiple abscesses surrounded by consolidated areas were present in the lungs. In some of the abscesses the pus had dried and in others it was fresher. In all cases the suppuration was connected with the bronchi, which, in many places, were dilated, and thus were produced bronchiectatic cavities. This was evidently a case of aspiration pneumonia, septic germs being drawn by inspiration from the abscess in the mouth to the lungs, setting up secondary abscesses and a consequent pneumonia. There were no other manifestations to account for the condition of the lungs, and the cause of death was therefore attributed to this suppurative broncho-pneumonia, produced in the way above mentioned.

The case is of importance as showing the liability to serious pneumonia where an abscess in the mouth is neglected. The mouth, if long untreated, renders the system liable to disease by weakening the constitution, so that a pneumonia can, with unusual ease, follow the aspiration of septic germs. I feel sure that had the cow been subjected to an early operation the chances of such infection would have been greatly lessened.

In conclusion, I thank Dr. Martin of McGill Pathological Laboratory, for the kindly interest he has taken in this case.

JOHN GREER, JR.

McGill University.

A COW WITH CHRONIC COUGH, BUT DID NOT REACT TO TUBERCULIN.

The mother of cow above mentioned developed, some six years ago, a persistent bronchial cough that would not respond to treatment. She was then carrying the heifer—her first calf. I told the owner my suspicions, but as she was milking well I delayed the test for tuberculosis for four years, when she was tested with tuberculin and gave a reaction of $2\frac{2}{3}^{\circ}$ F. The daughter about this time developed a cough similar to the

mother. She was also tested, and reacted but $\frac{2}{3}^{\circ}$ F. My client decided to kill the mother, but not the daughter.

The *autopsy* revealed: right lung entirely hepatized; a mass of cheesy degeneration with cavities here and there containing pus; air entirely occluded: of left lung, anterior lobe one large cavity containing about one quart of pus; middle lobe—tubercles and small abscess, entirely hepatized; posterior lobe contained some tubercles in the first stages. The entire pleura was literally covered with tubercles. There were some on the omentum. The liver contained two or three large tubercles. The posterior lobe of left lung alone retained its function, but the animal was in fair condition, and yielding some six or eight quarts of milk daily.

The autopsy, and the knowledge that the daughter had for six years been the constant companion of the mother, continually breathing the same atmosphere, led me to believe that she also must be tuberculous, but the owner, a physician of prominence, stood loyally by tuberculin and refused to have her killed.

About the middle of February of this year I was again requested to test her, and before and after injection the temperature registered 102° F. Fifteen hours after the introduction of tuberculin the temperature had dropped to 101° F., and at twenty-one hours had returned to 102° F. Ten days later I made another injection of a new invoice of tuberculin, yet the temperature was the same as before, 102° F. Six hours later the temperature had dropped $\frac{3}{8}^{\circ}$ F., and continued to fall until, at the twentieth hour, it registered two degrees below the temperature taken before injection. At the twenty-sixth hour the temperature was back to $101\frac{2}{3}^{\circ}$ F. A few days later I destroyed the suspect.

Autopsy did not reveal the slightest sign of tuberculosis, but the large and small bronchi of both lungs contained finely masticated food; in some places packed into the bronchi very tightly, dry and hard, occluding the air; in others, and more particularly the larger tubes, looser and mixed with pus. Every evidence of chronic bronchitis, due to continuous irritation by this foreign matter.

From the facts noted I am impressed with the idea that tuberculin has an *antifebrile* action in cases where there is a febrile condition without the presence of tuberculosis; and

further, a *sedative* action upon the lungs, as this subject was always easier for several days after the injection. I believe that the introduction of tuberculin into the bovine species is perfectly harmless, unless tuberculosis is present, and that tuberculin is an infallible test.

LOUIS OLRV LUSSON, V. M. D.

Ardmore, March 12, 1896.

ENGORGEMENT COLIC.

In March, 1895, I was called by a farmer to see a mare which had fallen sick from eating chopped food composed of two parts of wheat and one part of corn. From the history given I concluded that I would find a case of acute indigestion. The farmer rode with me to the farm, which was about two miles distant, and on the way told me that on the day previous, being Sunday, he turned his seven horses into the barn-yard, and they got a door open, got to the "chop," and ate as much as they could hold.

Upon our arrival I found the mare referred to in a very critical condition; pulse imperceptible, trembling, perspiring profusely, breathing very much oppressed, a little tympany of the cecum and colon, considerable nervous irritability and pain. *Diagnosis* was gastric tympany. *Prognosis* was unfavorable. I hurriedly gave her some medicine which she swallowed with difficulty.

When I had done this I examined the other six, and found four that were just commencing to show distress. Realizing that I had not medicine enough in my case for all, I made up several doses for the first patient and started back to town after what I thought I would need.

On my return, forty-five minutes later, the first patient was dead and another very near it. The remaining three showed the following symptoms: One, a large, strong horse—laminitis; the other two (two-year-olds), standing immovable, panting, pulse about 70 and very weak, perspiring profusely, at first considerable nervous irritation, conjunctiva injected, distressed, temperature very slightly elevated, bowels at first active but very soon quiet, no tympany, considerable soreness in the feet, as shown by refusing to move.

Diagnosis, not made. *Treatment*, a dose each of ol. lini., ol. terebinth., sodii bicarb. and zingiber., followed by injections

of warm water *per rectum*, and repeated doses of fl. ext. of belladonna and fl. ext. cannab. Indica. *Prognosis*, guarded. To say that I was in considerable of a predicament would hardly do it justice, as I found the distress and excitement increasing, and by four o'clock two more were dead, four in all.

Postmortem.—I found neither inflammation, rupture, impaction nor flatus, and concluded that they died from paralysis of the bowels and nervous prostration. This experience gave me considerable uneasiness, as it happened on the very first call that I had after locating in the town. I will be pleased to have some one respond as to the *diagnosis and treatment*.

Goshen, Indiana.

D. K. BUZZARD, D. V. S.

POSTPARTURIENT HEMORRHAGE IN A MARE.

In November, 1895, I was called to see an Ambassador mare suffering from postparturient hemorrhage. Gave ergot every half hour until three doses were given; inserted cloths into the uterus to cause uterine contraction, and left them there for one hour; applied bandages to the abdomen and the hemorrhage stopped. Next day I was sent for because the mare would not eat, was standing with back arched, looking around to side, stamping with hind feet, and attempting to urinate frequently. On examination I suspected that I had a case of metritis to deal with. Gave laxative, morphin alternately with hyposulphite of soda, and injection of a weak solution of carbolic acid. The mare seemed to get better. In a few days I was again called, the owner saying that the mare was doing well, except that occasionally a gush of blood came from the vagina. At the postero-inferior part of vagina I found an opening that would admit a half-inch rubber tube to the extent of fifteen inches. The sinus was surrounded by a hard swelling leading upward and forward along the left side of the wall of the vagina and terminating in an enlargement about six inches in diameter on the left side of the uterus. By pressure on the enlargement, following the sinus backward, I removed large quantities of clotted blood. I realized that it was a case of secondary hemorrhage, gave tonics with injections of weak solution of carbolic acid twice daily. Mare has recovered, with no traces of enlargement in the uterus or vagina.

S. E. BRETZ, D. V. S.

Little Sandusky, O.

TUMOR IN MESENTERY OF A COLT.

Subject.—A chestnut gelding, three years old, in poor condition.

History.—Worked well, was a free driver, ate well, licked the manger, gnawed the fences and lay down more than the other horses did. Had been of no use for six months. I diagnosed the case as chronic indigestion, gave treatment and told the owner to bring the horse to me if he was no better when the medicine was gone.

A few days later the owner requested me to see the horse, as he was much worse. Found him lying flat on the ground; occasionally he would arise, paw with one forefoot, look around at his side, then lay down and remain there for half an hour or more. The pulse and temperature were normal, but the bowels had not moved that day. I diagnosed impaction, gave a pill composed of aloes, calomel, nux vomica and belladonna. Gave nux and small doses of belladonna every two hours, and left chloral hydrate to control severe pain should it arise.

On my return the next day I found that the bowels had responded to the cathartic, but that all other symptoms were as the day before. In the evening the symptoms were still the same. I then told the owner that I suspected some abnormal growth in the abdominal cavity. Horse died the next day with all the symptoms of enteritis.

Postmortem.—A tumor about the size of a man's head in the mesentery of the small intestines, firmly adhering to the small intestines but not constricting them. Tumor was hard, cut like cartilage, and contained about two ounces of a pus-like material.

This is the third case of this kind that I have seen, and all in horses under four years of age.

S. E. BRETZ, D. V. S.

Sandusky, Ohio.

MORBUS INCOGNITUS IN A MULE.

WANTED—A Diagnosis.

The following is a report of a case that occurred several years ago, and up to this day I have never seen a similar one, and I am still unable to give it a name.

The disease occurred in a fine-looking gray mule recently shipped from Kentucky, and apparently in perfect health.

About two months afterward the following symptoms were observed:

The first unusual thing noticed about the mule was an intense pruritus about the crestneck and withers; the animal was mad in its efforts to allay the itching.

Upon examination of this region a number of depressions or pits were discovered as well as innumerable rounded, well-defined swellings, from the size of a pea to that of a marble. The depressions contained foul-smelling, cheesy, granular masses, that would pop out upon pressure, like "black-heads" in the skin of the human face; some of them could only be removed by curetting with a hoof knife, and some would drop out of their own accord. This, however, depended upon the stage of necrosis.

These tumefactions or nodules contained at first a black and unhealthy-looking blood, which gradually underwent coagulation necrosis. The period of these peculiar phenomena, the complete formation of one of these morbid processes, required from four days to a week, according to the size. As many as thirty to forty of these foci, in different stages of development, would exist at one time. It required throwing the mule down daily and curetting each spot in order to keep pace with their development. The poor mule became so accustomed to the hobbles, which was the only way we could manage her, as the entire region of the neck was so hypersensitive—she would kick at you if you pointed a finger at her—that she would often lie down before we had the hobbles on, or had even passed the rope through. Every morning there would be a fresh crop of cheesy lumps, some recurring in the old excavations, and others invading new tissues.

The cutaneous and subcutaneous tissues, alone apparently, succumbed to this necrosis, and furthermore, it seemed to confine itself entirely to the crest of the neck, withers and scapular regions. One morning, however, the attendant carelessly allowed some crude carbolic acid to run over the shoulders and pectoral regions, and in a few days the track of the acid was beautifully traced out by an outcropping of this same morbid phenomenon as existed higher up.

After about three months of the hardest kind of fighting by almost daily removing the new growths and through the

application of iodide of sulphur ointment, the disease abated, the pruritus ceased and the mule was apparently in perfect health. Throughout this long siege, in every other respect the animal seemed to be perfectly sound—manifested no symptoms of any general disease.

About the first of March, 1892 (the disease started in December, 1891) the mule was put to work, at which she continued until about June, 1892. She was then sent to pasture, where she remained about a month. She was then returned to the stable affected in the same manner and very much reduced in flesh, and, in addition, had a suspicious cough, with a fetid, creamy discharge from both nostrils, but no swelling of superficial glands. There was slight elevation of temperature from time to time during this relapse. I made another long struggle for four months. I examined the products of the skin for parasites and bacilli of glanders and tuberculosis, with negative results. I called in a graduate of the American Veterinary College, who declared he had never seen a similar case, and who was unable to throw any light on the problem. The mule finally died, and as is too often the case, I was unable to perform a satisfactory necropsy. At night and by candle-light I opened the thoracic cavity and found both lungs studded throughout with these necrotic foci of exactly the same character as those in the dermic tissue.

It could hardly have been an anomalous type of glanders, or any contagious disease, as this mule mingled freely with her fellows in a large pen and rubbed her neck on every post within reach, and there has never been a case of glanders or any other contagious disease in this stable up to the time of this writing.

A. S. WHEELER, V. M. D.

New Orleans, La.

SELECTIONS.

THE CORNSTALK DISEASE OF CATTLE.

In the Bureau of Animal Industry's *Bulletin* No. 10 Dr. Veranus A. Moore and Dr. E. A. de Schweinitz have rendered a decided service by recording accounts of their studies of the cornstalk disease of cattle, *toxemia maidis*. The etiology of the disease was the chief subject of their investigations, and, though they do not profess to have got to the bottom of it, they have at least cleared away a lot of obstructing rubbish in the shape of theories. The cornstalk disease, it appears, exists only in the United States, and is practically confined to the northern part of the Mississippi Valley. It attacks cattle that are turned into cornfields in the autumn. Its outbreak occurs very soon after the animals have begun to eat the cornstalks, and its course is rapid and almost always fatal. Neither the symptoms nor the lesions seem to be very uniform. Dr. Moore had no opportunity of observing cattle affected with the disease except after their death, so he had to rely on descriptions given by owners. One owner found a steer lying down and unable to rise. Its head was extended, resting on the ground and moving continually from side to side; this was kept up for several hours, and then the steer died. Another owner had found his animals apparently well early in the morning, but two hours later a heifer was found resting squarely upon her knees, the head extended and resting upon the ground. She was frothing at the mouth and moaning as if in great distress, and died in about two hours.

The supposed causes of the disease which Dr. Moore thinks he and Dr. de Schweinitz have shown to be inoperative are the following: 1. Lack of salt and an insufficient supply of water. 2. Feeding the cornstalks without an admixture of other food, such as hay, straw, grain, or pasture grass. 3. Impaction of the omasum due to overfeeding upon the dry cornstalks. 4. The ingestion of corn smut. 5. A species of bacterium which is found in the lesion of a disease of corn known as "corn blight," or the "Burrill disease."

As to lesions, in some cases none were found, but this may have been owing to the fact that some of the organs were so decomposed as to be unfit for examination. Out of twelve cases, lesions of the brain were revealed in four, lesions of the heart in eight, lesions of the liver in eight, lesions of the spleen in seven, lesions of the kidneys in seven, lesions of the fourth stomach in nine, lesions of the duodenum in eight, lesions of the remaining intestines in six, and lesions of the lymphatics in three.—“*New York Medical Journal*,” March 14, 1896.

CONTRIBUTION TO THE STUDY OF ECZEMA.*

BY M. CASPAR.

[Translated and abstracted by Leonard Pearson.]

During the past summer a suppurative eczema of most stubborn character appeared among the horses used for the production of diphtheria anti-toxin by the Höchster Farbewerke and at first the cause was unknown. The trouble appeared first on a horse that had been in the stable for two years and afterward spread to a large number of the eighty head that were kept together.

The affection began in all cases on the sides and under-surface of the tail, about where the crupper comes, and as small moist spots secreting a clear sticky fluid. This exudate then dried and formed a yellow crust. The process spread gradually until a large portion of the tail became affected. Later, on a part of the affected surfaces dark-red groves formed, the exudate became grayish, sticky and mucus-like but did not resemble ordinary pus. Microscopic examination showed numerous leucocytes. The diagnosis was suppurative eczema of the tail.

The question as to the cause of the disease was an obscure one and the standard text-books were referred to without success. The influences that are usually looked upon as causes, as dirt and poor care of the skin, were not in operation here, because these horses received most careful attention and were kept in the best possible way.

* *Deutsche Thierärztliche Wochen-schrift*, Feb. 1, 1896.

Skin parasites were looked for without success. When some of the secretion from the diseased surfaces was spread upon a coverglass and stained with a basic anilin color and examined with a high power, oil immersion objective, a large number of small cocci were found, some in pairs, some in chains and some alone. As it did not seem probable that a pure culture could be taken direct from the skin, two white mice were inoculated subcutaneously with the secretion from horse No. 28.

The first died in four days and presented the following alterations: The deep layers of the skin of the back were infiltrated with yellowish-white pus and surrounded by a deep-red zone. In the infiltrated tissues there were many streptococci in long and short chains. The spleen was enlarged, bluish-red and friable. Cultures on agar and in bouillon were made from the blood and they were found to contain nothing but streptococci.

The second mouse died in six days and presented the same conditions. Other mice were inoculated with the secretion from the tails of other horses and with the same results.

From its method of growing in cultures and action on mice, the organism was recognized as *streptococcus pyogenis*.

After the germ had thus been detected in the secretion from a large number of tails it became evident that its presence was not accidental, and in order to determine its action some secretion was taken from the tail of an affected horse, placed on the side of a sound tail and rubbed in with the finger protected by a rubber cap. Exactly on the rubbed surface, the skin became a little swollen and painful in twenty-four hours, and in the following twenty-four hours it became red and moist; afterward, a crust formed on the surface and within a few days the spot healed. To complete the evidence, the sediment from the bottom of a bouillon culture of streptococci, twenty-four hours old, was rubbed into the skin on the side of a sound tail, with the same effect.

Further observation showed that the disease was probably carried from horse to horse by the thermometers and the strings attached to them; for it was the practice to prevent the falling of the thermometer by tying strings around the root of the tail, after the instrument had been inserted into the

anus. Afterward, the temperatures of the infected horses were measured with the same thermometers and by the same grooms, so that its spread was checked.

Some of the cases were most stubborn; they continued for months, spread all over the tail, destroyed most of the hair and in a few of them abscesses formed under the skin.

The most satisfactory treatment was to wash the tails thoroughly each day with warm water and soap.

These cases have been reported because they illustrate a cause of eczema that is not recognized in the text-books and show how serious this condition may be in a large stable. It is not claimed that all cases of eczema are caused by germs, but where a large number of animals are affected in much the same way the disease is probably of infectious origin.

INJURIES TO CATTLE FROM SWALLOWING POINTED OBJECTS.*

BY THEOBALD SMITH, M.D., AND CHARLES F. DAWSON, M.D.,
D. V. S.

That cattle are very prone to swallow indigestible substances, many of them injurious and even fatal, has been known to veterinarians for a long time. It is, however, regarded by many of them as of rare occurrence, a casualty worthy of note more as a curiosity than as something demanding constant attention.

Autopsies on tuberculous cattle made during the past four years have shown clearly that injuries inflicted by pointed metallic bodies are of frequent occurrence, and therefore of decided economic importance.

Information gained from the above-mentioned examinations causes us to believe that this evil may, to some extent, be prevented. It was noticed that while in certain herds nearly all animals examined were free from injuries due to foreign bodies, in others nearly every one was injured. On investigation it was ascertained that this difference was due to the fact that one

* Tenth and Eleventh Annual Reports of the Bureau of Animal Industry, pp. 78-81.

herd had access to miscellaneous objects on pastures and the others had not. Before giving any illustrations of these statements, let us see what injuries are caused by foreign bodies.

Among the most frequent postmortem indications of the presence of some foreign body are evidences of an inflammatory process about the second stomach by which it becomes fastened, either to the liver or to the diaphragm, or to both. In the new tissue formed by this inflammatory process are one or more round abscesses, or tumors, which when cut open discharge a foul-smelling pus. In some of the herds examined scarcely an animal was free from this inflammatory condition. The binding down of the free (ventral) end of the liver by inflammation is equally frequent and accompanied by a degeneration of some of the liver tissue. Again, the course of the foreign body is invariably toward the lungs and the heart. It punctures the liver or the diaphragm and penetrates a lobe of the lungs or the heart. When it enters the lungs a pneumonia is usually started which extends over the greater part of the affected lobes. In some instances an abscess forms, and this may break into an air-tube and the contents be discharged externally.

The most unfortunate and usually fatal injury is the penetration of the heart by the pointed body. Death may come speedily or slowly after a wasting disease, according to the nature of the injury to the heart. In the cases which we have seen the injury usually resulted in an inflammation of the pericardial sac, followed by suppuration. The pericardium becomes enormously distended with fluid and pus. This exudate compresses the heart to such an extent that its action becomes very feeble and death results from general dropsy.

Another disease which has been lately observed by us in dairy cattle, as a result of injury to the second stomach by foreign bodies, is abscess in the liver. Sometimes there were as many as five or six of these abscesses, each at least as large as a hen's egg and filled with foul pus.

The literature on this subject is meagre, most authors dismissing it with a few sentences. Thus Chauveau says :

It may be noted that the foreign bodies so frequently swallowed by ruminants are usually lodged in the reticulum. Therefore it is that at the bottom of the cells are found either small stones and needles or pins, often fixed in the intermediate septa, or nails, scraps of iron, etc.

Most writers deal only with the graver kinds of disease due to foreign bodies, such as those which affect the heart, because only fatal cases have come to their notice. Williams says :

In ruminants, particularly cattle, foreign bodies often find their way into the pericardium, wounding both it and the heart. While the "carditis" so induced is circumscribed and merely surrounds the point of puncture, the pericardial inflammation and exudation involve the whole surfaces of the membrane. Cattle are exceedingly fond of chewing and swallowing all sorts of substances. For example, nothing seems to give greater pleasure to a cow than to have an old boot or other piece of leather in its mouth, and this it will chew at with evident gratification. An old brush is also a dainty morsel, and I have seen as a consequence of this that the pericardium has been pricked by the brush nail. Many kinds of sharp-pointed materials have been found in the pericardium of cows. I have seen hairpins, horse-nails and needles. Some writers suppose that needles frequently pass from the esophagus to the heart. Such an occurrence is quite possible, but my own experience, and that of other veterinarians in this country, points to the conclusion that the foreign body finds its way to the heart from the second stomach, first of all piercing the wall of that viscus and the diaphragm, and being gradually drawn by the suction action of the heart into the pericardial sac, generally wounding some portion, commonly the apex of the heart itself. At present I need only state that in cases where a foreign body has been found inducing pericarditis, its course from the second stomach through the diaphragm and mediastinum into the pericardium can be demonstrated postmortem by the presence of a canal or opening, surrounded by walls of lymph, extending from the stomach to the heart, the foreign body itself lying in the canal, generally more or less eroded or worm-eaten by the action of the juices by which it is surrounded. Sometimes, however, the foreign body, particularly if a substance, such as a needle, which soon rusts, is worn down to a mere fragment, or, in some instances, has entirely disappeared by chemic decomposition. In other instances it has been found in the cavities of the heart itself.

Steel, in his "Diseases of the Ox," mentions traumatic heart disease as a rather frequent occurrence. He finds hairpins, knitting needles and nails as a cause. Gamgee described as the cause of a fatal case of traumatic cardiac disease a "pomegranate prickle," a little over an inch long and as thick as a writing quill, which after death was found lodged in one of the cavities of the heart.

Although cattle swallow a great variety of objects, it is the pointed, slender, metallic ones, such as pieces of wire, hairpins, etc., which do most harm.*

* It is a common practice among the maw cleaners at the stock yards in Chicago, to collect as curiosities all foreign bodies which are found in the stomachs. Mr. J. B. Sine, an employe of the Bureau of Animal Industry at Chicago, made a collection of articles which were said to have been taken from the stomachs of cattle slaughtered for beef, and loaned them to the

M. Boizy states that the presence of a foreign body when it is the cause of pericarditis may be diagnosed with great certainty. Certain symptoms are common to both simple and traumatic pericarditis, the latter being the form usually caused by foreign bodies. In both forms the pulse is feeble. There is venous pulsation, and edema of the dewlap.

The only certain differential symptoms are the peculiar character of the heart sounds and the eructation of gas.

In the simple form the gurgling sound is heard with extreme difficulty.

In the traumatic form it is easily heard, and has a rushing, gurgling character, resembling the sound produced by the plunging of butter in a churn. If the noise be feeble increased exercise will increase it, making it plainly audible.

Simple pericarditis is comparatively rare. In it there is no marked eructation of gas.

To show the differences in the postmortem appearances in herds which are on pastures favorable to the production of the injuries under discussion, and those herds which are not subjected to such influences, the following may be used as good illustrations:

HERD A.

Belongs to a large school for girls on the outskirts of a city. The cow pasture was used as a playground. Of thirteen head of cattle killed on account of being affected with tuberculosis, all had lesions referable to the swallowing of pointed bodies. This is shown in the following summary in which the word "adhesion" means an inflammatory process, which resulted in the binding together of the liver, second stomach, and diaphragm:

ADHESIONS.

No. 1. Abscess between liver and diaphragm. Extensive adhesion of lungs to chest wall of pericardium.

No. 2. Extensive adhesions only.

No. 3. Extensive adhesions with two abscesses containing a piece of wire and a hairpin.

No. 4. Slight adhesions only.

Bureau as an exhibit for the Columbian Exposition. The following is a partial list of the articles exhibited: A large jack-knife, a silver watch chain, a silver dollar, several smaller coins, numerous metal hairpins, buttons, suspender buckles, Masonic emblem, several pieces of scrap iron, some flat, and others round and bent, several very large nails and many of the smaller sizes.

- No. 5. Slight adhesions only.
- No. 6. Extensive adhesions; also adhesions of lungs.
- No. 7. Slight adhesions; also adhesions of lungs.
- No. 8. Extensive adhesions. Large abscess attached to lungs contained a hairpin. Adhesion of pericardium to heart.
- No. 9. Adhesion of lungs to each other and to chest wall.
- No. 10. Extensive adhesions with abscesses; also adhesions in chest.
- No. 11. Moderate adhesions with abscesses.
- No. 12. Extensive adhesions with abscesses. One abscess contained hairpin.
- No. 13. Extensive adhesions. Abscesses in liver.

HERD B.

Belongs to a large school for boys. Pasture large, not used for any other purpose. Of twenty-eight animals killed on account of being affected with tuberculosis, only one had adhesions about the second stomach.

It should be noticed that the diseased condition caused by the penetrating wires (chiefly hairpins in Herd A) was responsible also for quite extensive inflammation about the heart and lungs.

Other herds in the suburbs of a large city which were pastured on unfenced ground, were found affected more or less like Herd A. Thus, in one herd of ten head killed, four were found affected with adhesions more or less extensive. Three of these also had abscesses.

In another herd, four were killed and three found affected. Of the latter, one had abscesses in the liver, another a foul-smelling abscess in the lungs. In a third herd, four out of eleven showed the effects of having swallowed pointed bodies.

It might be claimed that in many of these cases permanent injury to the health of the affected cattle or to their productiveness could not result from the conditions noted above; but a second thought will convince any impartial reader that such a claim is quite erroneous. The severe inflammatory action resulting in the formation of abscesses about the second stomach, the binding of the liver and the second stomach to the diaphragm, the presence of foul abscesses in the liver and in the lungs, and the adhesions of the lungs must surely more or less reduce the vitality of the affected animal. More than this, the offending body often penetrates the heart wall itself, resulting in a hemorrhage, which in many cases proves rapidly fatal.

A compilation of the number of cattle which have succumbed to traumatic disease, due to the presence of foreign bodies, would probably show a high mortality. Such cases have not infrequently come to our notice. The losses due to it throughout the whole country would, if they could be accurately calculated, make the subject appear worthy of close attention on the part of cattle owners. Many animals die suddenly and without apparent cause, and if all such were examined, the cause of death in a large percentage of cases would probably be traced to the swallowing of pointed objects.

The frequency of certain traumatic diseases in cattle is thus due to the carelessness of the owners or the attendants of cattle. The milkmaid drops pins and hairpins, the workmen lose or throw away nails, and in removing wire from baled hay are indifferent as to what becomes of the small, broken pieces. The increased use of wire in the construction of fences, and for telegraph and telephone lines, etc., leads to the scattering of small pieces along roads and on pastures.

Cows should not have access to rubbish heaps or to sweepings from buildings, for in these the dangerous objects lie concealed. Care should be taken that all pieces of wire are promptly placed beyond the reach of cattle. Throwing such things upon fenced or unfenced pastures should be studiously avoided. This is a disease without any promise of a cure, but is one for which even the least intelligent can practice daily prevention without any material expenditure or extra labor.

PROCEEDINGS OF SOCIETIES.

KEYSTONE VETERINARY MEDICAL ASSOCIATION.

The Keystone Veterinary Medical Association was called to order by President J. B. Hart, Tuesday evening, February 11, at 8.30. The members present were Drs. H. P. Eves, W. H. Hoskins, John R. Hart, Charles Lintz, H. J. McClellan, W. L. Rhoads, and J. T. McNulty. The visitors were Drs. Thomas B. Rayner, F. E. Allen, J. O. George, J. McBirney, B. M. Underhill and some of the students of the Veterinary Department of the University of Pennsylvania.

Dr. Hoskins, in speaking of the bill endorsed by the Association at its last meeting, said, while the interest taken in it was universal he did not think it safe to feel too sure of its success, and urged those present to further efforts.

It was announced that the Board of Veterinary Medical Examiners would give their examinations in Philadelphia on the third Monday and Tuesday of April.

Dr. Eves gave a very interesting talk covering many of the diseases met with in Delaware. Among those mentioned were tuberculosis, anthrax, hydrophobia, ringworm in cattle, tetanus, meningitis, hog cholera, estris bovis, and contagious abortion.

In speaking of tuberculosis he said out of 1100 cows tested, about 200 were condemned, and the postmortems proved them to be tuberculous.

Delaware has fifty to sixty fatal cases of anthrax annually. This is found principally upon the salt meadows, and is supposed to be carried from the infected districts of New Jersey by the flood tides. They inoculated 850 cows, thus protecting them, then returned them to the infected districts, with a loss of but two head.

They use in each case three grades of virus.

No. 1 kills white mice invariably, and nothing else.

No. 2 kills white mice and guinea pigs in 60 per cent of cases.

No. 3 kills white mice and guinea pigs invariably, but has not as yet killed a rabbit.

Nos. 1 and 2 cause no disturbance whatever when injected into cows and calves

No. 3, in twelve to fifteen instances in about 850 cases caused marked edema and loss of milk for twenty-four hours.

They have report of death of twenty sheep in infected district.

They have tested fourteen cases of glanders at Middletown with mallein without reaction. He cited the case of the owner of a glandered horse dying with all the symptoms of glanders. His physician persisted in the belief that it was malignant erysipelas.

Cited a case of a mare having discharge from nostril for three years, suddenly became worse; being tested with mallein gave reaction of $103\frac{2}{10}$ degrees. Post-mortem proved diagnosis of glanders to be correct.

They have had some mycotic enteritis, supposed to be caused in some cases from feeding decayed turnips, as the other food was good and the trouble ceased when they stopped feeding the turnips. Other cattle at the experiment station gained flesh when fed upon the same turnips. The chemist was unable to find any poison.

The ringworm has been traced to the importation of York State calves, and when treated early with external applications of tincture iodi, yields readily.

Tetanus is not near so prevalent as it was two years ago.

Contagious abortion they treat successfully with hypodermatic injections of carbolic acid.

Five thousand to six thousand horses have died within the last ten years from meningitis, thus causing an enormous loss. They believe this to be a chemic trouble caused by atmospheric changes. Though they have fed supposed infectious food to young horses and have raised cultures of all the fungus found on the infected premises and fed the pure cultures, they have not been able to produce the disease.

Dr. McBirney spoke of a herd at Charles City, Iowa, examined for tuberculosis, of which thirteen out of twenty-two were pronounced tubercular, and post-mortem proved diagnosis correct.

Dr. McBirney exhibited two very interesting specimens, one being a section of pancreas from an ox. It consisted of a large duct filled with little white granules most closely resembling homeopathic pills. These when handled felt like a small bag of shot, and contained about four ounces.

The other was a honeycomb piece of carbonate of lime, 2 by 1½ inches, taken from the brisket of an ox. Both of these animals were in good condition.

Drs. McAnulty and McClellan each reported recovery of a mule from cerebro-spinal meningitis.

Dr. B. M. Underhill reported a case of rabies in a chestnut gelding nine years old. This case, having been seen by several of those present, elicited some discussion among all present.

After extending a vote of thanks to those who had assisted in the different reports and papers, the Association adjourned to meet March 10, 1896.

W. L. RHODES,
Secretary

MONTREAL VETERINARY MEDICAL ASSOCIATION.

A regular meeting was held in the Library, on Thursday, January 23, 1896, Dr. Charles McEachran presiding.

Mr. J. A. Ness furnished an interesting case report, and exhibited a peculiar looking specimen from the uterus of a cow. It consisted of a band of fibrous tissue about ten inches in length, the presence of which in the uterus had given rise to symptoms simulating labor pains.

Sections had been prepared and were shown under the microscope, evidencing the fact that the growth was composed of fibrous tissue only. Dr. McEachran was of the opinion that the band was a sequel of a previous parturition in which some lacerations had occurred. He had frequently found similar growths in the vagina, arising from apparently the same cause, and which were in many cases a mechanical obstruction to delivery.

Mr. J. J. McCarry read an instructive paper on "Postmortems," describing in an entertaining manner the methods to be followed in conducting autopsies. This led to considerable discussion on the part of the members, during which were

pointed out the precautions necessary when death had occurred from a disease of a contagious nature.

Dr. McEachran referred to the careless and consequently unsatisfactory manner in which post mortems are frequently conducted, and mentioned the fact that the only English work on the subject was by Dr. Clement of the Class of '83.

The essayist for the next meeting was notified, and adjournment took place.

HARRI H. DELL,
Secretary and Treasurer.

MONTREAL, CANADA, February 7, 1896.

A well attended meeting was held in the Library on Thursday evening, February 6, 1896, with the President Dr. M. C. Baker in the chair. The minutes of the previous meeting were read and approved. The librarian, Mr. J. A. Ness, reported the addition to the library of several new works.

Mr. J. J. McCarry reported an interesting case which had recently come under his observation. The subject was a horse which two years ago, as the result of a boiler explosion, had been blown through the doorway of a building, but was not at the time thought to have sustained any very serious injury. Shortly afterward he developed a fistula above the point of the shoulder. A seton was inserted and the animal put to pasture. For a time recovery appeared to have taken place, but later the symptoms returned, and last December an operation resulted in the removal of a rivet-head about three-fourths of an inch in diameter from under the *levator humeri*, where it had probably lodged at the time of the explosion. The animal made a good recovery and is now working daily.

Mr. E. H. Morris read an excellent paper on "Hemoglobinemia," which it was stated is not a disease of the kidney, but under the influence of various causes a secondary nephritis may accompany it. The symptoms, pathology, sequelæ and treatment were each in turn described. One case, that of a mule, was instanced, that was peculiar in that the muscles of the shoulder were the only ones affected.

The discussion following was mostly concerned with the treatment of the disease, and after further remarks by the chairman, the meeting adjourned.

HARRI H. DELL,
Secretary and Treasurer.

MONTREAL, Canada, February 20, 1896.

A regular meeting of the association was held in the Library of the Faculty of Comparative Medicine and Veterinary Science on Thursday, February 20. The Honorary President, Dr. D. McEachran, occupied the chair. After the roll call and reading of the minutes of the previous meeting, the librarian reported the addition of several new works to the library.

A committee was appointed of Dr. Dawes, Messrs. Kee and Ness, to draft resolutions on the death of Dr. Donald Campbell, '82.

Mr. F. W. Kee furnished the case report for the evening, describing a peculiar case of "Suppurative mediastino-pericarditis in a horse." A prolonged discussion followed on the pathology of the case, also on the general treatment of thoracic affections.

Mr. J. A. Ness read an interesting paper on horse breeding, describing the selection, care and management of breeding animals. The relative merits of Clydes and Percherons came first under discussion, it being the consensus of opinion that the former were better adapted to the climate of this country. Dr. D McEachran closed the discussion by an interesting historical résumé of the origin of the French Canadian horse. "They are," he stated, "the descendants of French mares and Arabs or Barbs imported from the Levant by the officers stationed in the province during its occupation by the French." After further remarks on the subject of "first impregnation," the meeting adjourned.

HARRI H. DELL,
Secretary and Treasurer.

MONTREAL, Canada, March 5, 1896.

A regular meeting of the association was held in the Library of the Faculty of Comparative Medicine and Veterinary Science on Thursday evening, March 5. There was a good attendance of members, the Second Vice-President, Mr. E. C. Thurston, occupying the chair. After the roll call and the reading of the minutes of the previous meeting, the secretary read a communication from Dr. A. T. Rowat, of Honolulu, on *Paracentesis Abdominis*. The technique of the operation and its indications were described by the writer in a lucid and entertaining manner. He had in his own practice proved the great utility of puncturing the intestine in cases of flatulence, and attributed the unfortunate sequelæ, which some practitioners ascribe to the operation, as due to lack of asepsis or of delaying the operation until the case is beyond recovery.

In the discussion following, Drs. C. McEachran and Martin pointed out that with proper precautions, the operation was not only simple, but was safe, and well warranted by the good results to be obtained.

Concerning peritonitis in the horse as a sequela, it was thought that the peritoneum of that animal is not so liable to inflammatory lesions following trauma or surgical interference as is generally supposed, and many instances were adduced in support of this view.

A motion by Mr. Kee was unanimously carried, "That the secretary be instructed to convey to Dr. Rowat the thanks of the association for his communication, which is most highly appreciated, evidencing on the part of the writer the interest he maintains in the welfare of the association."

Mr. C. H. Higgins read a case report of traumatic ventral hernia with rupture of the udder in a cow that evoked further discussion on peritonitis, during which Mr. Higgins pointed out the great field, as yet untouched, for research concerning the contents of the intestinal tract of the various domestic animals from a bacteriological point of view.

Mr. S. C. Richards presented an admirably prepared paper on acute specific pleurisy in the horse. He described the clinical history and post-mortem changes found in an animal which he recently had under his observation. In the discussion following, Dr. Martin stated that, in human practice, a bacteriological examination of the pleuritic effusion was an invaluable aid in arriving at a correct diagnosis of the pathological changes present, and why should the same not be true of veterinary practice.

Mr. Higgins reported, on behalf of the Experiment Committee, that the dog from which the spleen had been removed six weeks previously had been destroyed. Beyond a chronic peritonitis at the site of the operation, no other abnormalities were noted. There was no glandular enlargement of any description. Blood counts were not made.

Mr. J. H. Patterson promised a paper on colic for the next meeting, and adjournment took place.

HARRI H. DELL,
Secretary and Treasurer.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

PHILADELPHIA, PA., March 3, 1896.

The Pennsylvania State Veterinary Medical Association assembled in Odd Fellows' Temple, Broad and Cherry streets.

The meeting was called to order at 10.30 a. m., President Dr. Leonard Pearson in the Chair.

At roll call the following members responded :

Drs. Adams, Allen, Benner, Bridge, Butterfield, Castor, Collins, Conard, Diemer, Farley, Fitzpatrick, J. C. Foelker, Goentner, Harger, Jno. R. Hart, Hoffman, Hoskins, Houldsworth, Keiler, Keil, Kooker, Larzelere, Lintz, Lusson, McAnulty, McClellan, Miller, Noack, Pearson, G. B. Raynor, T. B. Raynor, Jos. B. Raynor, Jas. B. Raynor, Rechtenwald, Rhoads, Ridge, Sallinger, Stanton, Williams, Zuill.

Visitors, Dr. H. P. Eves, of Delaware, and a number of students from the Veterinary Department, University of Pennsylvania.

The president then delivered his annual address, giving a brief review of the progress which our profession has experienced during the past year, and the domain of the veterinarian. He said that the value of expert veterinary advice is insufficiently appreciated, through the lack of opportunities to draw upon the knowledge and skill of veterinarians, because he has specialized to such an extent upon the diseases of the horse that his broader domain is not sufficiently recognized. He also referred to the growing importance of meat, milk and dairy inspection.

The chair then announced that the nomination of officers to serve for the ensuing year was in order, and the following nominations were made :

President, Dr. W. H. Ridge; First Vice-President, Dr. James B. Raynor; Second Vice-President, Dr. J. T. McAnulty; Third Vice-President, Dr. J. T. Farley; Treasurer, Dr. Jno. R. Hart; Recording Secretary, Dr. W. G. Benner; Corresponding Secretary, Dr. F. S. Allen; Board of Censors, Drs. S. J. J. Harger, W. L. Zuill, W. H. Hoskins, J. C. McNeil, T. B. Raynor, F. Bridge, M. E. Conard, Jacob Helmer, J. W. Sallade, Otto Noack, F. S. Allen.

A motion prevailed that the secretary cast the ballot for nominees where there were no opposing candidates. Carried. Tellers, Drs. W. S. Kooker and James B. Raynor.

The president thereupon announced the officers for the ensuing year: President, Dr. W. H. Ridge; First Vice-President, Jas. B. Raynor; Second Vice-President, J. T. McAnulty; Third Vice-President, J. T. Farley; Treasurer, Jno. R. Hart; Recording Secretary, W. G. Benner; Corresponding Secretary, F. S. Allen; Censors, S. J. J. Harger, W. L. Zuill, W. H. Hoskins, J. C. McNeil, T. B. Raynor.

The following were applicants for membership: Drs. George Jobson, Charles Falconer and A. O. Cawley.

A recess of fifteen minutes was then taken that the Board of Censors might examine the applications. The Board offered a favorable recommendation of Drs. Jobson, Cawley and Falconer.

Dr. Jobson being present, was introduced by the president, and, with a few well chosen remarks, thanked the association for the honor conferred.

Dr. Hoskins eulogized upon the death of one of our members and collaborator, Dr. William N. Custer, of Reading, Pa., and moved that a committee be appointed to draft suitable resolutions. The motion carried, and the chair appointed Drs. W. H. Hoskins, T. B. Raynor and Otto Noack.

Dr. Hoskins also reported the continued illness of Dr. Weber, of Lancaster; that he was still unable to attend to his duties, and that the contribution at the last meeting amounted to about twenty-six dollars, which he gratefully acknowledged.

Under new business, Drs. Ridge and Zuill offered the following resolution:

Resolved, That Article VII, Section 1, shall be altered to read:

These By-Laws may be altered or amended by two-thirds of the members present at the annual meeting, provided the said alterations or amendments have been proposed in writing at a previous meeting by two members, and any article or section of these By-Laws may be suspended during a single meeting by the unanimous consent of the members present, excepting the suspension be to vote on alteration or amendment of the By-Laws.

W. H. RIDGE,
W. L. ZUILL.

Discussion followed as to the best method to be employed to collect initiation fees and dues.

Dr. Hoskins moved that the secretary comply with the report and recommendations of the treasurer.

After considerable discussion, in which several participated, the motion carried. At 1.15 p. m., a motion to adjourn for luncheon was entertained.

AFTERNOON SESSION.

Called to order by the President, Dr. Pearson,

Dr. Hoskins called up the amendment to Article V, Section 2, of the By-Laws.

Dr. Goentner considered it unfair to expel a member on account of absence at three consecutive meetings, as long as the dues were paid, since some might be unable to attend through inability to procure a substitute.

Dr. Rechtenwald said he would be compelled to resign if the amendment was enforced.

Dr. Hoskins thought it would be an incentive to better attendance.

Dr. Harger considered coercion to attendance a bad incentive, and the adoption of such an amendment equal to a punishment for a personal transgression.

Dr. Zuill thinks it unconstitutional; that if a member pays his dues, he is a member and could not be compelled to attend.

The question was finally decided by a rising vote, twelve for and sixteen against.

Dr. Kooker then moved that Article V, Section 2, be stricken from the By-Laws, which was carried.

It was moved and seconded, that the association listen to a report by Dr. Hoskins on the work done by the Veterinary Medical Examiners for the State of Pennsylvania.

It was moved and seconded, that the association give the Committee on Legislation proper support in introducing and securing the passage of an amendment to Veterinary Examiners' Act, favoring an increase of the fee paid by applicants for examination.

General discussion on the subject of Tuberculosis of Cattle was then in order, and was opened by Dr. Pearson.

Dr. Pearson, upon inquiry by Dr. Jobson, answered that the sanitary measures adopted to prevent the extension of the disease after once tested with tuberculin, were thorough cleansing with soap and hot water, afterward spraying with a 1-1000 solution of bichloride of mercury, with the addition of sunlight and ventilation. Dr. Zuill again claimed tuberculin not infallible, as it would give reactions in diseases other than tuberculosis.

Dr. Hoskins thought that dairymen ought to be more careful as to personal cleanliness.

Dr. Miller favors regular systematic cleaning, with sunlight, ventilation and regular exercise.

Dr. Eves believes in dairy as well as milk inspection, where the former is inadmissible.

The meeting then adjourned.

SECOND DAY

The meeting was called to order at 10.15 a. m., by the president, with the following present :

Drs. Allen, Benner, Collins, Conard, Felton, Fœlker, George, Goentner, Good, Hart, Harger, Hartman, Helmer, Houldsworth, Keely, Knight, Keil, Kooker, Larzelere, Lintz, Luson, McAnulty, McClellan, Michener, Miller, Moyer, Nicholson, Oyler, Pearson, G. B. Raynor, T. B. Raynor, Jas. B. Raynor, John B. Raynor, Rechtenwald, Reinhart, Rhoads, Ridge, Ross, Schreiber, Senseman, Stanton, Timberman, Turner, Williams, Zuill.

The president called upon the chairman of Committee on Sanitary Science and Police. Dr. Conard reported outbreaks of glanders, tuberculosis, hog cholera, the usual influenza, strangles and epizootic abortion, which he considers the cause of more loss to dairymen than tuberculosis.

Report of Committee on Legislation by Dr. Hoskins then followed. Report was accepted, filed, and committee discharged.

It was moved by Dr. Kooker, and seconded by Dr. T. B. Raynor, that a vote of thanks be tendered to Dr. Hoskins for his valuable services rendered in the interest of the profession. Carried unanimously by a rising vote.

Dr. Hoskins by a few well chosen remarks thankfully accepted the offering.

Dr. Hoskins spoke upon the measures adopted for the prevention of the spread of abortion by local irrigation through the means of overhead tanks filled with bichloride of mercury solutions; also injections of carbolic acid solutions.

Dr. Goentner has used antiseptic vaginal injections and fumigations, and has not had a recurrence. He believes in the injection of one-half ounce of a two per cent solution of carbolic acid. After a second injection he has not had abortion,

Dr. Conard knows cases where herds have been inoculated by the male during coition.

Dr. Harger favors an injection of a two per cent solution of carbolic acid sub-cutaneously, five injections, one every two weeks.

Dr. Zuill said that carbolic acid was effectively used in England about two years ago.

Dr. Conard asked whether an abortion by injury could form a nucleus for spread of the disease.

His manner of treatment is almost similar to Dr. Harger's; he uses two and a half per cent solutions and makes about six injections; never had a case following the second injection, with two exceptions.

Dehorning was spoken of as a factor in the production of abortion.

Dr. Conard favors dehorning, as it will lessen the trouble.

Dr. Michener says it will run its course, but he believes in disinfection. We should not claim too much for the injections of carbolic acid solutions.

Next in order was the reading of essays and communications.

Paper on "Pleasure of Being a Veterinarian," by Dr. J. C. Michener.

Dr. Jas. B. Raynor on "Osteo Porosis."

"Pathogenesis and Development of Disease," by Dr. W. L. Rhoads.

The papers abounded with valuable suggestions and were enjoyed by all present.

Dr. Zuill being called upon for his description of the operation of "Cunean tenotomy," responded. He believes in removing as much of the tendon as possible through a vertical incision about an inch and one-half long. By that method he cures about ninety per cent, and about five per cent partially; where there is no ulceration of the articular surfaces cure is almost certain. If it does not cure, it does not alter the action or function of the parts.

Dr. Harger gave a description of the operation of median neurectomy. After briefly reviewing the anatomy of the part, he spoke of the patients that would be benefited by the operation; also spoke of the dangers and results following the operation.

Dr. Pearson spoke on the use of barium chloride as a prompt cathartic by intravenous injections. He used about sixteen grains in two drams of distilled water.

Papers and descriptions of operations discussed by Drs. Kooker, Hoskins, Michener, Lusson, Conard, Williams, Goentner, Miller, Ridge, Rechtenwald, Helmer, Harger and Eves.

The essays, communications, descriptions of operations, were, to say the least, exceedingly edifying and enjoyed by all present.

Dr. C. Ii. Magill handed in his resignation.

Dr. Hoskins moved that it be laid over until the next meeting. Carried.

Dr. Hoskins offered the following resolutions :

"*Resolved*, That we endorse Senate Bill, No. 1240, fixing the pay and rank of the veterinary surgeons of the United States Army at that of second lieutenant of cavalry, limiting the number to two to each regiment of cavalry, and restricting the appointments to graduates of recognized veterinary colleges of the United States, to citizens of the United States, and to such as shall have passed the examination directed by the Secretary of War.

"*Resolved*, That the Live Stock Sanitary Board is hereby requested to direct the State Veterinarian to co-operate with the veterinarians and others of this State who have had experience with the many very imperfectly understood diseases afflicting the domestic animals of the State, and to arrange to conduct investigations with a view to discovering their causes and the means to be employed in preventing and curing them; and,

"*Resolved*, That we heartily concur in the action of the State Legislature creating the Department of Agriculture, believing that much more valuable service can thus be rendered through well established departments, with heads where responsibility of the work may be better fixed and where there may be hearty co-operation of the several lines of work now placed under the control of the departments, and which are so closely allied as to lose much of their value when under widely-separate boards or bureaus."

Dr. Hoskins, Chairman of the Committee on Resolutions, then offered a resolution of condolence relative to the death of our collaborator, Dr. W. U. Custer, copies of which were ordered sent to the family and to the various journals of veterinary medicine for publication.

Dr. Hart moved that our next place of meeting be Reading, at a time after the meeting of the United States Veterinary Medical Association. Carried.

Dr. Hart also moved that the Legislation Committee be instructed to present to the next Legislature an amendment providing for an increase in the examination fee for veterinary surgeons from ten to twenty dollars. Carried.

The retiring president then introduced the president-elect, Dr. W. H. Ridge. The latter, on taking the chair, thanked the members of the association for the honor conferred.

The other officers elected were then severally introduced and accepted the new duties assigned to them.

Dr. Pearson announced that Dr. Hoffman had a specimen of the heart of a pig, and also an instrument that he would exhibit at the Veterinary Department of the University of Pennsylvania, to which place Dr. Hoskins announced we would adjourn now, to meet this afternoon.

President Ridge then announced the names of standing committees for the ensuing year :

Committee of Arrangements.—Drs. W. S. Kooker, John Hart, Otto Noack.

Committee on Legislation.—Drs. Jno. R. Hart, Leonard Pearson, S. J. J Harger, J. C. Foelker, J. C. Michener, T. B. Raynor, Chas. Goentner.

Committee on Sanitary Science and Police.—Drs. Leonard Pearson, Chas. Schaufler, W. H. Knight, P. M. Minister, C. R. Good, M. E. Conard, Otto Noack.

Committee on Intelligence and Education.—Drs. W. L. Zuill, Robt. Gladfelter, Chas. Williams, M. J. Collins, J. W. Sallade.

Upon motion, we adjourned for luncheon to meet at the Veterinary Department, University of Pennsylvania, at 2.30 P. M.

At the hospital of the Veterinary Department were witnessed the operation of cunean resection by Dr. Zuill, who operated both in standing and recumbent positions. He removed both tendons.

On the same subject Dr. Harger removed a portion of the median nerve—median neurectomy. Both operations were dexterously performed.

Dr. Pearson then demonstrated the use of barium chloride.

Dr. Hoffman then exhibited an interesting specimen, the heart of a pig; also an instrument to facilitate the operation of ovariectomy in cows and mares.

The instrument is original with him, and promises advantages over the ecraseur.

Upon request he demonstrated the use of the instrument on a mare, extirpating the right ovary.

He says he has operated on a large number of mares and cows without fatalities.

Dr. Hoskins gave his experience with ethyl chloride as a local anesthetic. He prefers it to cocain for minor operations.

W. G. BENNER,
Recording Secretary.

VETERINARY MEDICAL ASSOCIATION OF NORTH DAKOTA.

The Fourth Annual Meeting of the North Dakota Veterinary Medical Association convened December 4, 1895, at Hotel Dakotah, Grand Forks, N. D. The following members responded to roll-call: Drs. Taylor, Turcott, Crewe, LaPointe, Shepard, Hinebauch. Visitors present were Drs. Miller, O'Connor, and Graftograph.

The morning session was taken up principally with the report of the treasurer and secretary and the reading of a paper by Dr. Hinebauch on the use of electricity in the practice of veterinary medicine and surgery. The paper was discussed at considerable length, a number of the veterinarians present having previously assisted the writer in diagnosing several cases of difficult lameness by means of the battery.

The afternoon session was opened by the President's address, followed by a paper on millet disease in horses. This paper was a continuation of the one presented two years previous. In the discussion which followed Dr. Turcott remarked that he had been somewhat skeptical regarding the influence of millet as a disease-producing food. He said that the evidence of the experiments, however, convinced him that millet had more or less of an influence in producing pathologic conditions.

The society is in a very healthy condition, having now a total membership of twenty. There are but twenty-one graduated veterinarians in the State, hence we think we can boast of a larger percentage of membership than any other State society.

The society can congratulate itself upon being able to have a law passed at the last session of the Legislature which hereafter will control the practice of veterinary medicine and surgery in the State. Although the law was not all the society wished, yet it was all that it could expect.

LAWS REGULATING THE PRACTICE OF VETERINARY MEDICINE
IN NORTH DAKOTA.

SEC. 1615. *Qualifications of Veterinarians.*—Each person practicing veterinary medicine, surgery or dentistry in any of its departments in this State, shall possess the qualifications required by this article ; provided that any person who has practiced veterinary medicine, surgery or dentistry as a profession in this State for three years immediately preceding the passage and approval of this article, and who shall be a citizen of the United States, or shall have declared his intention to become such, shall be deemed eligible to registration, and shall receive a certificate upon presentation of a sworn affidavit and letters of recommendation from five reputable freeholders in his locality, or upon presentation of a diploma from a legally authorized veterinary school, college or university, if made before July 1, 1895.

SEC. 1616. *Board of Examiners, How Appointed. Term.*—The Governor shall appoint a board of examiners within thirty days after the passage of this article, to be known as the State Board of Veterinary Medical Examiners. Such board shall consist of three practicing veterinarians, who shall each be the holder of a diploma granted by a legally authorized veterinary school, college or university, who shall hold office, one for one year, one for two years, and one for three years, after such appointment, or until their successors are appointed. Thereafter, each year the Governor shall appoint one member of said board to fill the vacancy occasioned by the expiration of the term of office of those previously appointed, and is further authorized to fill such vacancies as may occur.

SEC. 1617. *Organization of Board.*—Said board shall elect a president, secretary and treasurer. It shall have a common seal, and the president and secretary shall have power to administer oaths. Said board shall hold meetings for the examination of candidates on the second Wednesday of April and October of each year, and such other meetings as may be deemed necessary, at such time and place as the board may appoint, no session to exceed two days. The board shall issue a certificate of qualification to all applicants who shall pass the required examination, and who shall be citizens of the United States, or shall have legally declared their intention to become such, and to all applicants who are eligible to registration under Section 1615, signed by the president and secretary of the board.

Such certificate or diploma shall be conclusive as to the right of the lawful holder of same to practice veterinary medicine, surgery or dentistry in this State. Said board shall keep a record of all the^{*} proceedings thereof, and also a record or register of each applicant for a license, together with his name, age and time spent in the study of veterinary medicine, surgery or dentistry; and if a graduate, the name and location of the school, college or university granting such diploma. Said books and records shall be *prima facie* evidence of all the matter therein recorded.

SEC. 1618. *Permit to Practice.*—Any person wishing to practice veterinary medicine, surgery or dentistry, who is qualified under Section 1621, may apply to the president of the Board of Examiners for a permit to practice. The president shall, upon the payment of five dollars, if satisfied that the applicant is qualified and a suitable person, issue to him a permit to practice^{*} until the next meeting of the board, and such permit shall have the same force as a certificate from the

board, but shall expire upon the adjournment of the next meeting of the Board of Exminers.

SEC. 1619. *Diplomas and Certificates.*—Persons presenting diplomas and certificates for registration shall pay to the treasurer of said board a fee of ten dollars in advance; and the fees received by said board shall be paid over to the State Treasurer within thirty days after receipt of the same. Said fees shall constitute a special fund for the payment of the expenses of said Board of Examiners. Each member of said board shall receive from the State Treasury all necessary traveling expenses actually incurred in attending such meetings.

The secretary of the board shall certify to the State Auditor after each meeting of the board the amount due each member for necessary expenses in attending such meetings, and other expenses of the board. The State Auditor shall thereupon issue his warrant on the State Treasurer for such sum, provided there has been a sufficient amount paid into the treasury in fees to redeem said warrants; but, if there is not an amount equal to said certified expenses to the credit of such fund, he shall issue his warrant for the amount in the said special fund, and deficiencies in the payment of said expenses may be made up from subsequent receipts.

SEC. 1620. *Misdemeanor to practice, etc., when.*—Any person who either :

1. Practices veterinary medicine, surgery or dentistry, in this State without compliance with the provisions of this article; or

2. Wilfully and falsely claims or pretends to have or hold a certificate of registration issued by such board; or

3. Wilfully and falsely, with intent to deceive the public, claims or pretends to be a graduate of or to hold a diploma granted by a legally authorized veterinary school, college or university, is guilty of a misdemeanor, and upon conviction is punishable by a fine of not less than fifty nor more than one hundred dollars, and in case of nonpayment of such fine, the person so offending shall be liable to imprisonment for a period not exceeding six months. All fines received under this article shall be paid into the common school fund of the county in which such conviction takes place.

SEC. 1621. *Examination.*—All persons commencing the practice of veterinary medicine, surgery or dentistry, in this State after the passage and approval of this act, shall be graduates of a legally authorized veterinary school, college or university, and shall subject themselves to such examination as the board may require.

SEC. 1622. *Certificates Recorded.*—Every person holding a certificate from the Board of Examiners, shall have it recorded in the office of the Register of Deeds in the county in which he resides, within thirty days after the date of said certificate, and the record shall be indorsed thereon. Any person removing to another county to practice shall record within thirty days the certificate in a like manner in the county to which he removes, and the holder of the certificate shall pay to the register of deeds a fee of one dollar for making the record.

SEC. 1623. *Gratuitous Services.*—Gratuitous service in cases of emergency in the dishorning of cattle, or castration of animals, shall not be construed as coming within the meaning of this article.

SEC. 1624. *Witnesses. Expert Fees.*—Any person complying with the provisions of this article shall be entitled to expert fees as a witness in all civil actions relating to the veterinary profession.

Fargo, N. D.

T. D. HINEBAUCH,
Secretary.

OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The Ohio State Veterinary Medical Association convened for its thirteenth annual session in the library of the Park Hotel, Columbus, Ohio, Monday evening, January 13, 1896.

The meeting was called to order at 8 o'clock by the president, Dr. J. D. Fair.

The president began with very appropriate remarks concerning the good attendance, the Ohio Veterinary Law, the amendments to be presented for discussion, etc.

Roll call showed the following veterinarians present: Drs. T. B. Cotton, Mt. Vernon, O.; T. B. Hillock, Columbus, O.; W. E. Wight, Delaware, O.; J. C. Meyer, Jr., Cincinnati, O.; W. R. Howe, Dayton, O.; G. W. Butler, Circleville, O.; Walter Shaw, Dayton, O.; F. E. Anderson, Findlay, O.; J. D. Fair, Berlin, O.; W. J. Torrence, Cleveland, O.; W. H. Gribble, Washington C. H., O.; E. H. Shepherd, Cleveland, O.; S. E. Bretz, Little Sandusky, O.; H. M. Ball, Columbus, O.; L. W. Carl, Columbus, O.; J. H. Blattenburg, Lima, O.; J. V. Newton, Toledo, O.; J. E. Foster, Coshocton, O.; G. W. Cliffe, Upper Sandusky, O.; S. D. Meyer, Wilmington, O.; J. A. Meagher, Glendale, O.; J. O. Price, Lancaster, O.; C. E. Leist, Columbus, O.; S. S. Snyder, Cincinnati, O.; C. V. Hedges, Circleville, O.; P. A. Dillahun, Springfield, O., and O. D. Franks, Springfield, O.

Minutes of last meeting were read and approved.

Although, by our new by-laws, new officers do not take their chairs until the close of the annual meeting at which they are elected, yet the chair ruled that the first order of business was the nomination and election of officers.

Nominations, for president, Dr. Shepherd; for first vice-president, Dr. Wight; for second vice-president, Dr. Howe; for secretary, Dr. Gribble; for treasurer, Dr. Hillock. There being but one nominee for each office, the rules were suspended and each officer was elected by acclamation.

The following were applicants for membership: Drs. P. A. Dillahun, Springfield, O., Ont. Vet. Coll., '93; Sidney D. Meyer, Wilmington, O., Ont. Vet. Coll., '94; G. W. Cliffe, Upper Sandusky, O., Ohio Vet. Coll., '92; Louis P. Cook, Cincinnati, O., Ohio Vet. Coll., '95; J. A. Meagher, Glendale, O., Ohio Vet. Coll., '95; O. D. Franks, Springfield, O., Ont. Vet. Coll., '85. All were elected.

Dr. G. W. Butler then read an exceedingly able and interesting paper on "The Use of Anesthetics in Veterinary Practice." (Published elsewhere in this number of the VETERINARY MAGAZINE).

Discussion.—Dr. Shaw gave chloroform rapidly and used but little at a time; had operated for "roaring" by using one and a half ounces of the drug. He had tried to kill horses by chloroform inhalation, but thus far had failed.

Dr. Cotton gave chloroform with plenty of air; he thought veterinarians should use anesthetics more—use them whenever they could; it was humane. One trouble was that a great many people would not pay for its use.

Dr. J. C. Meyer thought the use of anesthetics marked a great advance in our profession; his patrons approved of it. He used it years ago, but had a horse fracture his back during struggles while administering chloroform, and he then quit using it, but had commenced again, giving it by a different method. He gives $\frac{3}{4}$ ss of chloral previous to the administration of the anesthetic; he then puts his patient in slings, lifts him almost off the floor, ties up a foreleg to prevent injury, then uses the inhaler. When under the influence of the anesthetic he lets the patient down. He gives chloroform to dogs by tying a piece of cloth over a vessel, as a tumbler, then cuts a hole in the cloth large enough for the dog's nose to pass through. This keeps the dog's eyes out of the way of the drug.

Dr. Howe thought the A. C. E. mixture good for horses, but too slow for dogs; he usually puts dogs to sleep with ether, then keeps them so with the A. C. E. mixture. He gives horses $\frac{3}{4}$ ss chloral in a pint of water and three ounces of simple syrup previous to anesthesia.

Dr. Torrence said that perhaps he was a "cocain crank," as he performed many operations with it. He firmly believes that many cases of chronic cough were due to the chloral that had been given; he had seen cases where the mucous membrane of the esophagus and stomach was eaten off by the irritant action of this drug. He gives chloral in capsules. He has had several cases die where he has used chloral, and on postmortem he has found mucous membrane of stomach floating in its contents, having sloughed off in patches.

Dr. Shepherd said he had never failed to kill a horse with chloroform whenever he had tried to do so, although he had to use two pounds at one time to do so. He thought that we should take into consideration the suffering of the animal while going into anesthesia, and also the effects after using it, for he believed many operations caused less actual pain than does the administering of an anesthetic. He is satisfied that chloral is often given so strong that it produces sloughing of the mucous membrane.

Dr. Howe did not believe sloughing or irritation possible if a pint of water and three ounces of simple syrup were given with each ounce of chloral.

Dr. Gribble had had special facilities for killing animals—there being a fertilizer factory within a mile of his home, and he had failed as yet to kill a horse by chloroform inhalation. He said that he had used sulphate of strychnin dissolved in boiling water, and allowed to cool, and that an intratracheal injection of this solution, containing, say, four or five grains, will kill a horse in no time.

Dr. Butler said he believed Dr. Meyer should have discontinued the use of his hobbles, instead of the use of anesthetics. The old English hobble (so called) was never suitable to throw or confine a horse. He used anesthetics in his practice for his own feeling's sake, even though he might receive no more pay than he would receive without them.

Report of special committee on legislation :—Dr. Gribble read the present Ohio Veterinary Law, and the amendments as agreed upon by the committee. These were discussed at great length, and it was finally decided to be unwise to attempt too much legislation during the present session of the legislature. An amendment compelling all those eligible to practice under the law to register would be a long step in the right direction, and every member of the association should speak to his representative in the legislature, and try and obtain this, if possible. The present harmony of opinions makes one again hopeful for good, sound legislation to the

benefit of the stock owner and veterinarian. The discussion closed with the appointment of a committee, composed of Drs. W. H. Gribble, W. R. Howe and J. D. Fair, to wait upon the State Board of Veterinary Examiners at its session in the State House, on the following day, and solicit its aid in trying to get an amendment compelling registration, and increasing the examination fee to \$10.00.

Adjourned to meet the following morning at 8 o'clock.

TUESDAY, January 14, 1896.

Meeting called to order by the president, Dr. J. D. Fair, at 8.15 a. m. Drs. G. W. Butler, S. E. Bretz and Walter Shaw were appointed to audit the books of the association.

A motion was made and seconded, that hereafter the secretary send no invitations to our sessions to suspended or expelled members.

This brought out an extended debate, and finally Dr. Wright offered, as an amendment to the motion, "that the secretary be instructed to send invitations to our meetings to all veterinary graduates in Ohio whose addresses he could obtain." This amendment was carried.

It was decided that our next meeting be in Columbus, during the time of the mid-summer race meeting, the secretary to notify members when the exact date was ascertained.

The auditing committee reported a balance in the hands of the treasurer of \$295.54.

Dr. S. E. Bretz then read a report of two very interesting cases occurring in his practice (see Reports of Cases, *VETERINARY MAGAZINE*). The main part of the discussion following was as to what caused the tumor in Case I, some holding it to be internal scirrhus cord due to castration; others the result of distemper, etc.

Dr. Cotton, as chairman of the Committee on Veterinary Education, made a verbal report. Report accepted and the committee continued.

Dr. Torrence introduced the subject of treating gastric tympany in the horse by means of a nasal probang, or by passing a trocar directly into the stomach. This brought out an animated discussion, especially as to the possibility of passing the trocar into the stomach except through certain organs, producing lesions that would invariably cause death.

Dr. Cliffe related a very interesting case in which, at postmortem examination, there was found, near the stomach, a diseased and distended portion of the esophagus, which had a capacity of a half-gallon. The esophagus from the sac to the stomach appeared to be completely occluded. The diseased portion had the appearance of being carcinomatous.

Dr. Shepherd reported a peculiar case of a Spitz dog, that exhibited the trait of almost continually trying to catch flies, even when no flies were about. The appetite was good, yet he continued to lose flesh and became quite thin. Under tonic and alterative treatment he finally recovered.

Dr. Torrence described the case of a dog, in which he removed the petrous portion of the temporal bone for the treatment of internal canker of the ear, and the operation was followed by recovery.

Dr. Butler gave his experience in gastro-hysterotomy on sows. He had two successful operations out of a number performed.

Dr. Cliffe had operated successfully on nineteen sows, and he believed that a greater percentage would live after this operation than one could save by the use of hooks.

The committee to confer with the Veterinary Examining Board reported through Dr. Gribble. He reported the board's willingness to assist us in legislation looking to the advancement of our profession, but that the board thought on account of certain conditions it would be very impolitic to introduce too many or too radical changes in the law at the present session of the Legislature. It was finally decided that if we could obtain an amendment compelling the registration of all those eligible to practice under the present law, an increase in the examination fees to ten dollars, and the placing of moneys collected from fines in the treasury of said State Board, that was about all we should attempt. There was considerable talk as to the constitutionality of the present law. A majority of us almost believed it to be unconstitutional, and rather than proceed with an unconstitutional law (although this committee went uninstructed), we were convinced that the better way was to try to get an amendment allowing *all* those in practice to continue and merely register within a given length of time; but to compel all those entering practice in the State after the passage of the amendment to pass before the Board of State Examiners, no matter from what school they have received their diplomas, and to allow no others except those having diplomas, to *enter* practice, after the passage of this amendment. The greatest opposition to the present law comes not from empirics, but from those who graduated before the passage of the law, but within the previous three years (Sec. I.), the majority of them refusing to go before the board for examination, and, in fact, organizing to oppose the law. These graduates, being fresh from college, could reasonably be expected to pass a fair examination, especially as the examining board had adopted a rule requiring an average of but sixty per cent. Of course, those who knew they were unfit to practice, and knew their inability to pass any examination, no matter if they did have a diploma, we expected opposition from, but when our best young graduates joined the opposition and lowered their dignity to associate with, and ask assistance of, the veriest quacks, for the sake of fighting a form of examination they themselves could readily pass, we were at loss for a reason. No law can be obtained looking to the elevation of our profession without causing some few of us inconvenience, and allowing some others to practice who are totally unfit, but one would expect that graduates almost fresh from college would be the last to oppose a simple professional examination.

These facts and opinions were stated by your committee to the examining board, and we were there informed, that the attorney general, an ex-attorney general, and an able lawyer, now a State senator, had all given as their opinions that the law is constitutional as it now reads, and the board suggested to us that if these new graduates doubted the constitutionality of the law, a good plan might be for this association to try a friendly bout with them in our courts, and so decide it. In view of these facts, your committee set aside all suggestions in reference to the last-named amendments, and contented themselves with the advocacy of a registration law, etc. As the State Board of Examiners contains the Secretary of the State Board of Health and the Secretary of the State Board of Agriculture, we

deem their suggestions and aid of great importance to us. Report of the committee accepted and the committee continued.

A motion was carried, that we, as an association, request of the State Board of Veterinary Examiners, that they publish in our veterinary journals the names of all persons submitting to examination, and the results of the same, or furnish these facts to the secretary of this association for publication.

President, Dr. E. H. Shepherd, appointed the following committees:

Committee on Contagious Diseases—Dr. J. D. Fair, Dr. W. Shaw, Dr. L. W. Carl.

Committee on Veterinary Education—Dr. J. C. Meyers, Jr., Dr. G. W. Butler, Dr. S. D. Meyers.

No further business appearing, one of the most enjoyable sessions, both socially and professionally, adjourned.

Our semi-annual meeting will be held in Columbus, O., during the mid-summer race meeting. The secretary desires to call the especial attention of the members of committees as shown in this report to the fact that they have important duties to perform, and that the association expects their performance.

WM. H. GRIBBLE, D. V. S.,
Secretary.



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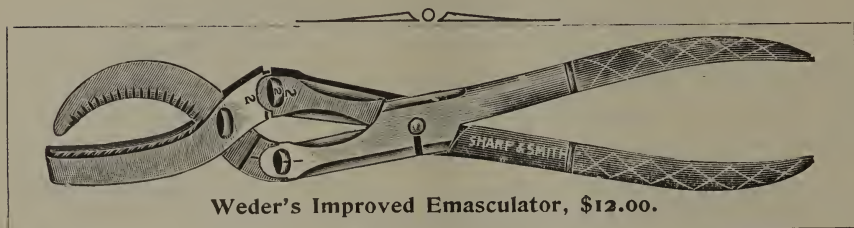
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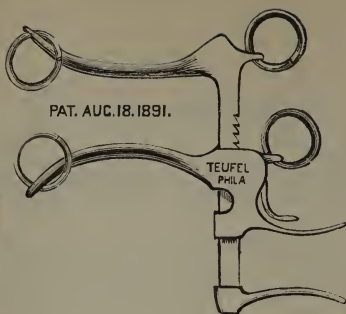
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